The Builder.

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The Designs for the London County Hall.

THE result of the competition for the London County Hall is a practical argument in favour of the open competition system, since it has brought to the front a young and hitherto unknown architect, who would have had no chance of an invitation to join in a selected and limited competition. This is certainly a point to be borne in mind next time the question of the good or evil of the competition system comes up for discussion in architectural circles.

Before going into the merits of the winning design and the other designs in detail, one is tempted to consider for a moment—what should one look for in a building of this immense size and importance, the largest building for municipal purposes that has yet been proposed? In the direct and obvious interests of the ratepayers of the County of London, economy is of course, to a certain point, a matter of duty to the public. But indirectly, and in a somewhat higher sense, the London public may be supposed to have an interest in seeing a building of grand and dignified architectural character erected, on this almost unique occasion; a building such as would architecturally symbolise the greatness of London. Some of the competitors have obviously been so impressed with this idea that they have indulged in immense domes, on a very lofty substructure, all of which is waste and empty space in the sections shown above the main line of the building. That is an extravagance which is out of place and unreasonable. But one does feel that a grand and monumental architectural character, with something of the dignity which a central feature like a dome can impart, even when not carried to an unreasonable and unpractical height, is what might be justly looked for in such a case, and would be worth some extra expense.

It is on this ground that we cannot feel quite as enthusiastic as we should wish to feel in regard to the selected design. It is not necessary to go into a description of it in words, as it is sufficiently illustrated in the present issue, and readers can form their own judgment. As the work of a young man it is a remarkable design in many ways. It is remarkable for the extremely simple and straightforward character of the plans; and in planning a building of this immense size and for such numerous requirements, the achievement of simplicity of plan is one of the highest of merits. It is remarkable in the architectural treatment for its breadth and simplicity of design, and for the entire absence of anything in it like trickery or pretentiousness or eccentricity. There is not a thing in it which could be considered to be in bad taste; and that also is in itself one of the very highest merits, and one which is less often found in the designs of young architects than in those whose taste has been toned down by mature experience. It is what we call a highly sensible design. But we cannot regard it as a great building in respect of architectural conception; and we had hoped for a great building. We are informed that the three assessors were unanimous; and we will not undertake at the moment to single out any special design which they ought to have preferred; perhaps it would be difficult to do so. But we cannot shut our eyes to the fact that there is finer architecture among some of the unsuccessful designs than is to be recognised in this one.

The best architectural point in the design is the treatment of the main entrance in Belvedere-road, with the semicircular sweep up to the centre, and the placing of the Public Hall as a circular building enshrined within this semicircle and concentric. That is the one point in the design which, architecturally considered, may be called a stroke of genius; but unfortunately it is liable to a serious criticism on practical grounds. The Council Chamber, as well as the Public Hall, is circular on plan, and with a domed ceiling over it. Now, we none of us know very much about acoustics, which has not yet developed into an exact science (and possibly never will); but if there is one thing that may be said to be certainly known, it is that there is no form of plan of a room so bad for speaking in—*i.e.*, for being properly heard in—as a circular room. If that Council Chamber is built as shown, circular on plan and with a domed ceiling, there will be trouble; and the point had better be considered before it is too late. There are one or two minor faults in

the plan. One is the two transverse corridors with rooms on each side of them, and no direct light but from windows at the end, which will not avail much. The importance of lighting corridors directly from open areas, instead of depending on the contrivance of borrowed light through doors, has been so fully recognised of late years, that one is surprised to find such a feature in a plan of this general merit. Another minor defect (which may easily be remedied) is that the route for return to the Chamber from the exit doors of the division lobbies is not nearly short or convenient enough. Members on leaving the division lobby would have to traverse nearly 100 ft. of corridor to return to the Council Chamber. That will never do. These are minor matters, however. But the shape of the Council Chamber is a serious one, and should be reconsidered.

The site for the building is an irregular one of which the Westminster Bridge-road end is the narrower, the site expanding considerably towards the north; Belvedere-road, which bounds it on the east, not being parallel with the western or Embankment line. Some of the competitors have accepted this irregular boundary line; others (more suitably we think, for a building of this importance) have ignored it, and been content to throw away some ground for the sake of a symmetrical plan. Messrs. Russell & Cooper (101), who may be congratulated on having produced one of the finest plans and one of the finest and most dignified elevations among the set, accept the main outlines of the site, and its expansion eastward, but they treat the Belvedere-road elevation as a long and very flat concave curve. The main entrance and staircase is from the centre of this façade; all the cross walls and corridors are normal to the Embankment front, the point of juncture on the centre axis being formed by the semicircular back wall of the Council Chamber, to which the oblique line of the Belvedere-road corridor forms a tangent. All the Council Chamber portion is admirably planned, perhaps with a little too much liberality of space in reception and assembly halls; and this plan shows how the division lobbies should be planned, with their exit doors close to the return doors into the Council Room. There is an entrance for "Members and Chiefs" in the centre of the Westminster Bridge-road elevation, opposite which is a central corridor running the whole length of the building (parallel with the Embankment front), and intersecting the Re-Assembly Hall in front of the Council Chamber. The lines of route are direct and simple, and all the corridors are completely lighted from open areas. The Public Hall is included in the east block of the building, with an entrance from Belvedere-road, and corridors and extra exits on each side of it. The river front is of a grand simplicity of design; the lower portion is a mass of rusticated masonry with plain windows in it; above this is an order of columns carried over the greater part of the front, only interrupted by the centre and end pavilions. Perhaps the design is a little too equally divided into two heights, but it is a grandiose and imposing design. The immense rather pagoda-like central tower would no doubt add very materially to the cost, nor do we quite like its outline, but it would have a powerful effect, and the whole building would be exceedingly stately, and be worthy architecturally of its great situation and purpose.

Mr. H. T. Hare's plan (117) is a perfectly rectangular and symmetrical one in its exterior lines, the public hall forming an offshoot at the north-east corner, connected with the main building by a corridor. One of the great points of this plan is the large square court into which the entrance passage from Westminster Bridge-road leads; this is surrounded by a colonnaded cloister with coupled columns, which would have a charming architectural effect, though as a cloister for perambulation it is unfortunately interrupted by projections of the building into it on the east and west side. The angle spaces apparently are not roofed either, so that this is really only a pleasant bit of architectural scenery. On the east side a main entrance in three bays leads to a large columned hall, on the farther side of which rises a straight staircase in three flights, 20 ft. wide, with return corridors at the top towards the Council Room on the central cross axis. The Council Room is square between the walls, but horseshoe in the arrangement of the seating. The division lobbies are roomy and close alongside the Council Room, and a wide corridor communication leads to the dining-room on one side and the Library on the other side. The Council Chamber and main staircase are lighted from the top by domed skylights which do not appear in the exterior design. The whole plan is exceedingly clear and symmetrical in arrangement. The Public Hall has an entrance by a semicircular portico at the south end, and is reached by staircases; the lower ground floor includes a part of the offices, the hall itself being on a level with the upper ground floor. We observe that the Architect's drawing department faces west, to the river front; rather a bad aspect for summer work. The architectural treatment is severe in its strongly marked horizontality. There are two stories of rustication as a base, the lower with circular the upper with square headed windows; on the whole we prefer this to a range of windows running through two stories with a mezzanine; it is less grandiose but more truthful. The centre portion of the river front has an order above this, formed of coupled columns, behind which is a wide river terrace for members, a fine feature both in an architectural and practical sense. The access to stairs to the Public and Press galleries is from doors out of the east entrance hall, just inside the building; this is well managed, so that the public are not brought too much into the interior of the building. The continuity of the river front is interrupted by pavilions on either side of the centre colonnade, over the centre portion of each of which rises a lantern or cupola (though it is not domed); these are the only architectural features which rise above the main line. They are pretty big however, rising 80 ft. above the blocking line of the main building, and having columns 30 ft. high; as in the lantern in the selected design, there is a want of scale here; taken by themselves, they look as if they belonged to a smaller building. But in the main this is a fine and dignified design with a very well worked out plan.

Mr. Flockhart's design (120), unlike most of them, occupies the centre portion of the space with a large open court, which is made use of to light various offices grouped in this portion of the building. On either side of this are cross corridors having entrances both from the Embankment and from Belvedere-road; between these, in Belvedere-road, the line of the plan takes a slight curve outwards. Within this is the Rents and Insurance office, easily accessible from either entrance; while the cross corridor on the south gives access, from both fronts, to the Payments and Receipts office, and the Building Act department is close to the corridor entrance from the Embankment. All this is very well arranged for the transaction of business. The main entrance is from Westminster Bridge-road, into an entrance hall leading into an inner hall whence rises the Councillors' Staircase on the same axis, leading by a short vestibule corridor to the Council Room, which is square with horseshoe seating. The Chairman of Council has a fine room on the river front (with easy communication with the Council Room), balanced by a large Committee Room at the same point on the other side of the centre. The wide members' lobbies and rooms around the central court would be very much appreciated, but are rather wasteful of space. On the east side the same points are occupied by large Committee Rooms as on the west side, so that there is a fine symmetry of plan in this centre portion. The members' Library finds place within the curved projection, before mentioned, above the Rents office. The entrances to the Public and Press Galleries are not very satisfactory, as their occupants enter the members' entrance hall and then go into a passage on each side divided off by a columned screen and leading to their staircases; and the entrances to these passages are close to those of the members' cloak-rooms. This is not a good bit of planning. Of the exterior design we can speak with some enthusiasm: it is certainly one of the finest sent in. The entrance façade in Westminster Bridge-road has a large order of Corinthian columns rising from the base line; this order is repeated on a decorative pavilion feature round the corner, as one may say, on both ends of both of the long façades. In the river front the central portion, above two stories of rusticated windows, is decorated with an Ionic order on rather a small scale; free columns with a space behind them. This colonnade is stopped at each end by a pavilion containing a great deal of solid wall surface, and crowned by a small cupola which rises out of the mass of building, contrasting agreeably with the square lines of the blocking of the centre portion. This rich treatment is enhanced in effect by a perfectly plain mass of rusticated walling, pierced with square windows, between it and the end pavilions. This façade is a piece of real architectural invention, of very fine and picturesque character.

Mr. A. Marshall Mackenzie's plan (119) is a very bold and very unusual one. Towards Belvedere-road he keeps a perfectly straight line; but on the embankment front the centre is set back with a concave curve at each end connecting it with the main front line, and this curve is repeated concentrically in the middle blocks of building behind it, which cross what would otherwise be the open court between the outer blocks of building. There is no sort of advantage in this practically; but it produces a variety of internal effect which is pleasing. The centre portion of the plan is a square block with the Council Chamber in the centre of it, square between the walls and with horse-shoe seating; on either side of it is an open court crossed in each case by the division lobby. East of this is a large main staircase hall and lobby; westward of it is a spacious members' lobby and members' terrace. A good many of the Committee-rooms are arranged in the inner curved block, which is a very quiet position for them: and the Payments and Receipts office is conveniently arranged for public access. The Building Act department, in the curved block on the second floor, is not convenient enough of access; and on the whole this arrangement of curved lines, though rather fascinating, hardly makes for convenience and simplicity of plan traffic. The elevation is grandiose in general effect, especially with the immense tower which is raised on the angle piers of the Council Chamber; this however, though entirely commendable architecturally, must be looked upon as an extravagance beyond the limit of cost, as the author obviously seems to have felt, as he shows an alternative design with the lower and the smaller cupolas omitted; the "alternative" consists simply of the omission of these, the design is otherwise unaltered. Both the river and the Belvedere-road frontages show an order of engaged columns along nearly the whole length of the façade; columns coupled in the centre and wings and single in the intermediate portions. There is a very large and curiously constructed frieze with circular windows in it, and a kind of bracket above each column between the round windows. The row of dormers above the intermediate portions of the façade rather interferes with the general character of the design, which is monumental, but a little monotonous.

Mr. Ernest George (122) adopts the diverging lines of site for his two long façades, keeping each, however, symmetrical and normal to the line of frontage. He, like others, places the main entrance in a large recessed bay in the Belvedere-road front; not the best place, because it may be presumed that the majority of members come from the other side of the river, and do not want to go all round to the further side of the building to get to their entrance. The entrance vestibule leads to a spacious staircase and to a long and tolerably wide reception-hall running parallel with the Belvedere-road line. The semicircular end of the Council-room, the axis of which is at right angles to the river front, backs on to the oblique line of the reception-hall, so that the adjustment of angles is easily made here. The division lobbies, square and perhaps a little too small, give exit on to cross corridors at each side of the Council-room block; these have a slight bend in the middle, to render them square to both fronts, and on the lower side they lead, very conveniently, to a large smoking-room on one side, and a Library on the other side. The Members' Dining-room is two floors below, on the lower ground floor, which is not so convenient; there are special stairs of access to it, however. On the principal floor the arrangements in connexion with the Council department are very good. There are intermediate business entrances, one on each side of the centre, in both the long fronts. The engineer's drawing offices are on the east front, the architect's on the west, which is not so good an aspect. The Building Act Offices are conveniently situated close to one of the entrances from the embankment. Taken as a whole this is a very well worked out plan; the lines of communication are simple and direct, and all the corridors have direct light from open areas the whole way along. The Hall is a rectangular room at the north-east angle, partly projecting at right angles to the Belvedere front; it is entered on the lower ground-floor level by a vestibule and staircases leading up to the Hall, which is on the ground-floor level. The elevation to the river shows a lofty centre, raised above the wings and flanked at each angle by a tower with an open cupola and angle turrets. There is a strong rusticated ground story, above which, between the towers, is an order running through three stories. The wings are very simply treated, only broken halfway by a segmental *fronton* on coupled columns; there is a high roof with dormers above it. The ends of this façade look rather weak; they want something more decisive to finish the composition, on both the long façades. At the south end of the building is an inclined road leading to a basement entrance for stores, giving access to two courtyards shown on the basement plan.

Messrs. Nicholson & Corlette (116) show an absolutely rectangular and symmetrical plan. They also make the principal entrance from Belvedere-road, leading across a long entrance-hall parallel with the road, to a main staircase on either side of an open well or central hall. This staircase would have a dignified effect; it culminates on a landing leading to a rather narrow members' lobby, on the other side of which is the Council-room, square in general plan, but with deep semicircular bays or niches at the angles. The division lobbies, with three bay windows lighting each of them from an open area, seem a little cramped, and in fact the spaces and what the French call *dégagements* in connexion with the Council-room seem generally rather meagre in respect of space, though there is a fine large Members' Terrace towards the river. There are business entrances from Belvedere-road on each side of the main entrance, and from the cross corridors connected with these open the stairs to the public and press galleries of the Council-room. The large Hall is on the centre of the Belvedere-road front, above the Entrance Hall, and is thus placed, in a sense, *en suite* with the Council-room, which is a good point; it would be reached by the public from side stairs at each of the main entrance halls, or by the grand staircase if they were allowed to use it. What we take to be the Building Act department is close to the public entrance at the south end of the building. Four large open areas are left in the plan (into which areas project the latrine blocks), and eight smaller ones, and all corridors have direct light from the courts for the greater part at least of their length. The internal traffic lines are of the simplest and most direct kind, and the principal corridor line is entirely uninterrupted all round the building. The position a number of the competitors have taken for the public hall—the north-east angle, where there is a projection eastward of the site boundary, the authors of this design have utilised as a site for "future extension." The exterior treatment differs very much from any of those which we have noticed hitherto, all of which have been classic in style; this one is essentially Gothic, though there is not much of actually Gothic detail in it; but it is the architecture of multiplicity rather than of mass. The general treatment on each of the long façades is very much the same; the centre block of the building is flanked by tower-like pavilions with vertically grouped windows, which rise a little above the general roof line and finish with a square outline; these are repeated at the angles of the façades, and midway between them is another feature which is crowned with a graceful turret or lantern. These turrets, unlike some we have mentioned, are in correct scale with the building, but the balustrade just beneath them, figured with a kind of Elizabethan-like scroll ornament, shows panels 7 ft. high, in which the ornament as sketched suggests a panel of about half the size. These balustrade designs do a good deal towards lessening the scale of the front. As a whole, the façades show an immense mass of mullioned windows of different sizes, with an effect which is monotonous and wanting in decisive *motif*: one requires some blank wall somewhere. On the Belvedere-road front the large round-arched traceried windows of the public hall make a central feature, and on the river side there is an emphasis given to the centre by the five large arched bays, the arches of which, with balustrades at the springing, open on the Members' Terrace; but the remainder of the elevations has far too gridiron an effect, in elevation at any rate; it will look better in perspective than it does on the flat. An immense tower-like mass rises in the rear, raised on the piers of the main staircase; but except for size, it hardly has an effect that could be worth the outlay, and it gives the impression of having been designed in a hurry and without much consideration of the scale or character of the details.

Mr. T. G. Jackson's design (118) is another which differs very much from the majority of the designs in style, though not in the same direction as the last-named set. He, like Mr. Ernest George, adopts the fan-like plan resulting from keeping up to the expanding boundaries of the site, with three main lines of corridor, at the centre and parallel with the two long sides; the centre one, on

three of the plans, running right from end to end of the building in one unbroken line. The Council Chamber also is set, as in Mr. George's plan, with the round end meeting the oblique line of the centre corridor, and the main entrance and staircase are from Belvedere-road. There is a public entrance at the south end, reached by an external flight of steps from Westminster Bridge-road; an effect Mr. Jackson has already tried at Cambridge, and which architecturally is always agreeable. This double flight of external stairs lands the public on the first-floor level, entering the building between the columns of an octastyle portico with a pediment over it. The architect's offices are on the southern front and near this entrance, but the remainder of the Building Act department seems to be two stories below, in the basement. We may probably take it, however, that the two rooms on the principal floor marked "architect," represent the two rooms in the present Building Act office at Spring-gardens, the clerks'-room and the Superintending Architect's private office, and that the public do not require access to the others. The elevations are on a much more delicate scale than many of the others, and all the parts are in scale, and harmonise with each other. On the river front the centre portion has a projecting pavilion at each end, between which, on the level of the two basement stories, is a colonnade of coupled columns carrying the Members' terrace above. Above this, and running the whole length of the façade (except where interrupted by some architecturally valuable intervals of blank wall at the pavilions) is an arcade on columns beneath which two stories of windows are grouped. Above this, in the centre portion, a pretty feature is made of a story of small windows separated by colonnettes. Over this come double-storied windows with alternate angular and curvilinear pediments in the orthodox fashion. There is no strongly defined cornice; only an eaves line with dormers over it; but that is in keeping with the general style of the design. The wings on each side of the centre mass are very simply treated, but at the angles of the Westminster Bridge front there are square pavilions rising above the main line of the building and finished with high leaded roofs. In the centre of the river front is a high campanile of graceful line, which however does not arise out of any special point in the plan; it is a centre feature, that is all. Mr. Jackson's plan loses, in comparison with some of the others we have noted, by not being so carefully worked out in detail—it is more like a sketch plan; nor are the elevations so effectively drawn as some others. But it would appear as a building of a great deal of architectural charm if carried out, only it may be said that it would rather suggest a very large château than a Municipal building—at least according to present ideas of what constitutes Municipal character in architecture.

Mr. G. Washington Browne (110) is to be congratulated on the bold and grand architectural conception of his plan; for the genius of architectural design can be as much shown in plan as in elevation. Accepting the fact of the diverging lines of the site, he has followed them by an expanding plan, but has treated the wide east end of the plan as a vast semicircle. The main entrance is from Belvedere-road, leading by a three-arched columned entrance-hall to an oval staircase hall—the long axis of the ellipse parallel with Belvedere-road; the stairs wind round the oval on each side, leading to a half-way landing from which a wide straight staircase is carried across the centre of the oval hall, and lands on the vestibule of the Council Chamber, leaving a columned gallery all round the oval hall for communication with the rooms on the Belvedere-road front of this floor. We have seldom seen a finer and more architecturally effective scheme for a staircase entrance to an important building. There are four "departmental entrances" by minor vestibules on the Belvedere-road side, and a staff entrance on the south side, with a bicycle store adjoining it. The ground is very heavily covered on the ground floor, to a great extent with departments in rooms top-lighted from the open courts above; the light would be all right, but these would not be very healthy rooms to work in. Above this level the plan becomes more open, and shows six large central courts for light, latrine blocks projecting into them. Members have a terrace on the principal floor level, which communicates with the embankment by external steps. The stairs to the public and press galleries are contained in octagon turrets outside the junction of the oval hall with the square portion of the building, they are reached through the small courtyards on each side, by doors in the corridors not far from two of the departmental entrances; a good enough arrangement. The Public Hall is a rectangular building projecting, at the north-east corner of the site, from the curve of the main building; the public enter at the east end, from Belvedere-road; at the other end is a door on to the platform from the main building. Communication is very well preserved; on each floor the outside corridor runs unbroken round the whole building, with sufficient cross connexions; and all the corridors are lighted direct from the open courts. But nevertheless, the plan seems to want simplicity in comparison with some others; there seems rather a want of principle in the grouping of the rooms; and there are some serious defects in detail; for instance, on the fourth-floor plan we see at the south end a long room extending nearly across the building, marked "24 draughtsmen," all working in a long room with a range of windows facing full south. Their work would be very uncomfortable. Nor could the "drawing office" projected as a semicircular bay from the east-end curve be considered a very well lighted room, though the aspect is right. The river front is a very grandiose design, with a high rusticated basement through two stories, and an order of columns above, with two stories of windows grouped between them, carried all along the building (except where interrupted by angle pavilions) and round the eastern semicircle. The straight portion of the front is decorated with cupolas over the end pavilions, and a lofty dome on an octagon base rises in the rear of the river front, marking the position of the Council Chamber. The elevations are beautifully executed. The design is a very costly one; the plan cannot be considered practically one of the best; and it may be doubted whether the great feature of the semi-circular sweep round the east end would not have been rather lost for want of space to see it from. But the author deserves appreciation for what is in an architectural sense a grand scheme, shown in a splendid set of drawings.

We have no space to go further this week, nor did the meagre two days allowed to "the press" suffice in any case to go carefully into so many large schemes; and it is only fair to the architects who have been at such immense pains in this great work that their designs, if judged at all, should be judged of only after as careful a consideration as circumstances permit. We hope to conclude our review of them in our next issue.

NOTES.

The Lesson of Greek Art. We print in the Report of the Institute meeting on Monday the portion of Professor Lethaby's address which contains the main summary of his argument. We are not at liberty to print it *in extenso*. But we may say that it was a very remarkable paper, as insisting that theory and ideals in architecture are of more value than has been recently recognised; that the perfection of Greek architecture arose from the fact that the Greeks had settled on a type or ideal which was the outcome of a governing tradition. We do not quite agree with Professor Lethaby's suggestion that this perfected type arose somewhat suddenly out of comparatively barbaric origins; if we had the whole chain of evidence before us we should probably find that Greek Doric had been long in the shaping, though it is true that some of the details which have been preserved of buildings not very long antecedent to the Parthenon are more crude than one would have expected, and there was no doubt a quickened impulse to perfection in the first half of the Vth century B.C. The important point is that the Greeks had an ideal type, and that we have not; that they worked on general principle and tradition, and we work on individual impulse (sometimes on individual eccentricity). Whether this, in modern conditions of life, can be mended, may be a question. But it is well to be reminded of it.

The Panama Canal. An important alteration has been made in the design of the locks at the Pacific end of the Isthmian Canal, which it is believed will effect a considerable saving and contribute very much to the safety of the locks in the event of war. Instead of two dams at La Boca San Juan and Soza-Corozal respectively, forming a lake some four miles long by two miles wide, and necessitating the removal of the Panama Railway, there will now be only one dam at Miraflores, in which will be constructed two locks affording communication between the sea and the 55 ft. level of the canal. This dam can be built entirely upon rock of sound character, occurring at a small depth

below the surface, and as the site is four miles farther from the sea, the locks are naturally in a better strategic position. A sea-level channel, 500 ft. wide, will lead from the Bay of Panama to the dam, and it is probable that the altered plans will result in economy of time for ships using the canal. The saving in capital outlay is stated at 1,600,000*l.*, which in itself is an item well worth consideration.

The Regulation of Advertisements.

MR. RICHARDSON EVANS, the Honorary Secretary of the Advertisement Regulation Society, has issued a short pamphlet containing some specimen by-laws suitable for use by local authorities, under the Act of last session, together with some pertinent observations on the subject. The main point is now, however, to induce local authorities to apply the Act. This can only be done by means of the ratepayers' representatives, and if the other members of a local authority can be sufficiently interested in the subject so as to bring forward a motion that the Act be put into force, this will bring the matter to a head in different localities—unless public opinion in a locality is influentially strong or unless some individuals are so interested in the subject as to cause them to keep the matter before the local Council, the recent statute will not have much effect. While the general education of the public is desirable, the most efficient weapon now is "lobbying"—not in the bad sense but in the business sense. Get—by a private talk or letter—Messrs. A. and B. to bring forward a motion, and the battle is half over in the locality in which they belong.

Standard Notation for Formulæ.

THE unnecessary trouble given to engineers and architects by the prevailing lack of uniformity in the notation employed for engineering and other formulæ has been illustrated in our present Student's Column, so far as concerns reinforced concrete. It would be easy to show that equally undesirable conditions of the same kind exist in respect of numerous other branches of constructive and theoretical work. The case for reform is a very strong one, and we are glad to learn that it has been taken up in earnest by the Civil and Mechanical Engineers' Society as the upshot of a recent discussion on the subject. A resolution passed on that occasion suggested that the Council should approach the leading engineering institutions and societies, and universities having engineering faculties—with the object of bringing about concerted action. Before doing this, however, the Council of the Society decided that it would be best to draw up a series of standard schedules of notation applying to various branches of work, so that the communications contemplated could be made in a way likely to conduce to tangible results. A small Committee has been appointed for this purpose, and we hope that it may prove to be the forerunner of a larger and more influential body representing all the leading institutions and societies concerned in the question. The Institute of British Architects ought certainly to be included among the list of institutions to be consulted.

Lightning Arresters.

THE paper describing "Protective Devices for High Tension Transmission Circuits," read by Mr. Peck to the Institution of Electrical Engineers this week, will be of interest to electricians and meteorolgists. Luckily in this country severe thunderstorms are of rare occurrence, and there are few overhead high tension transmission circuits, and so there is no immediate demand for these devices.. The photographs he shows of the high tension overhead systems and lightning arresters in use in America show that the æsthetic side of the question is absolutely disregarded. In one case we have three earthenware pipes, each about one foot in diameter and 6 ft. high, arranged beside a very primitive scaffolding of poles carrying huge porcelain insulators, to which the 45,000 volt wires are attached. In another case there is practically a forest of poles close together, some with large earthenware drain pipes attached to them, and all supporting 60,000 volt wires. Inside the drain pipes are arranged hundreds of aluminium dishes, separated by insulating pieces from one another, and all immersed in a suitable electrolyte. The electric resistance of a battery of electrolytic cells of this kind is very high for low pressures, but breaks down when the pressure exceeds a definite critical value, and thus acts as a safety valve for the line, preventing any abnormal rise of pressure due to lightning or accidental disturbances of the line. Mr. Peck thinks that this arrester affords greater protection than any other arrester yet introduced. The other types of arrester described are the water jet arrester—much used in the South of France—and the spark-gap arrester. In the former type, which has proved most efficient in practice, the lines make permanent contact with the earth through jets of running water, and the latter is simply an elaboration of the device used on practically every telegraph pole in this country for the last thirty or forty years.

Tynemouth Pier.

THE northern pier at the mouth of the River Tyne has always been a source of trouble and anxiety, being situated at a point where the sea is exceptionally boisterous during the prevalence of north-easterly gales. In 1898 the pier was so seriously damaged by a great storm that for the length of 1,500 ft. it has had to be rebuilt, an operation which was practically completed this month. Nearly 9,000 concrete blocks, in addition to 16,000 cubic yds. of mass concrete and large quantities of stone for parapets and facing, have been used on the works, which it is to be hoped will be able to withstand the most violent storms without injury. The Tyne Commissioners have acted wisely in deciding to repair a further section of the same pier, about 600 ft. long, which has been in an unsatisfactory condition for some time past. At the end of the reconstructed portion of the pier a new lighthouse has been built and equipped with the most approved type of lighting and fog-signalling apparatus, while a tunnel, 1,500 ft. long, affords communication between the lighthouse and the shore end of the new work. This is a facility that should be specially useful in stormy weather.

The New Post Office Buildings.

QUITE apart from architectural considerations, the new buildings under construction on the site of Christ's Hospital as an extension of the General Post Office are of much interest from the structural point of view. They represent the most important application hitherto made of reinforced concrete in this country, and probably in the whole world. There are to be three separate buildings above ground level connected by a two-story basement over the area of about 2½ acres. The entire structure will rest upon a foundation slab 5 in. thick reinforced, so as to insure uniform distribution of pressure upon the earth, and every detail, except some stone facing on the street front, will be in reinforced concrete on the Hennebique system. Good progress has been made at the present time, and various interesting structural features are already to be seen. One of these is a beam with the clear span of 35 ft., which will carry the weight of six stories of the building above. The convenience of reinforced concrete will be illustrated by the cantilever construction over the loading platforms, where the upper stories of the sorting office project about 15 ft. without any support from below, thus providing an absolutely clear space for the delivery of mailbags and baskets. The works are well worth a visit from all who wish to gain further knowledge of reinforced concrete construction.

Memorials of Greater London.

THE members and supporters of the Committee for the survey of the Memorials of Greater London make an appeal for assistance in the work they have carried on during the past thirteen years in the collection of a large mass of material, mainly by the voluntary aid of members, by means of which they have been able, thus far, to prepare some valuable monographs upon the Trinity Hospital at Mile End, the churches of Stepney and Stratford-le-Bow, the Great House at Leyton, Bromley Palace, etc., besides surveys of the parishes of Bromley-by-Bow, and Chelsea. The volumes are issued in an expensive and elegant form, and are offered to the public at a comparatively low price. The ninth monograph, to be ready in the course of the current month, deals with Crosby Hall, and will contain reproductions after old prints, with a series of modern drawings and photographs, and a complete architectural record of the building. The appeal is addressed to the public by Lords Ripon, Monkswell, Curzon, and Balcarres, the Countess of Lovelace, and Messrs. W. D. Carõe, Walter Crane, Phillip Norman, and W. J. Hardy.

Crosby-square, E.C.

SO RARE is the survival to our time of a private garden in the heart of the City that the projected sale of a house in Crosby-square, Bishopsgate-street, reminds us of

a stanza of Cowley's poem—"The Wish"—and his desire for retreat from "this great hive, the City":—

> "I should have then this only fear—
> Lest men, when they my pleasures see,
> Should hither throng to live like me,
> And so make a city here."

The present owner recently bought the house, No. 4 in the square, together with the large garden in the rear, and having taken off a portion of the garden-ground for his own purposes, is now about to dispose of the remainder of the site, either by sale at auction, as freehold, or by letting it upon a building lease. The property includes the frontage to Crosby-square, with the fine old house, and extends to a considerable depth, covering about 4,400 ft. superficial.

Royal Academy Lectures on Sculpture.

MR. W. R. COLTON, A.R.A., Professor of Sculpture at the Royal Academy, delivered on Monday the first of four lectures to students on Sculpture. The lecture dealt with some of the most beautiful sculpture in the world, and consisted mainly of an appreciation of the works of Donatello and Michelangelo. As regards sculpture generally, there can be little doubt, as the lecturer said, that the two great features have been the influence of the Greeks and the influence of Michelangelo. To the keen observer the latter influence is affecting French art very much at the present moment. The lecturer showed a number of beautiful lantern views of works by Alfred Stevens (who was no doubt influenced by Michelangelo), Donatello, Michelangelo, and others. Donatello was one of the world's great sculptors, to whom it owed much. Under Ghiberti there had been signs of decadence, but the sincere realism of Donatello gave sculpture new force and brought it back to its proper limits, thus laying the foundation for the great achievements of Michelangelo. Mr. Colton's illustrations of Michelangelo's work included the beautiful group of Christ and the Virgin Mother, which was modelled and carved in one year, and was the only work signed by the sculptor. He compared the equestrian statue of Gattamaleta by Donatello with the "Coleoni" of Verocchio, and said that the "Coleoni" was the finest equestrian statue in the world, although the horse moved both its legs on one side together. The most valuable possession that the Academy had, he said, was Michelangelo's marble relief of the Madonna and the Infant Christ, which people would crowd to see if it were in a foreign gallery. In dealing with the Greek influence, he showed the Laocoön group, which, he said, illustrated a second-rate school. It was degenerate, and trod on the heels of the arts where drama was more appropriate. It was altogether too pictorial, and the boys were little men anatomically. The Venus of Milo, in the Louvre, the supposed product of a second-rate period, was, on the other hand, a beautiful work, showing a most pure and beautiful sentiment, and there could be no real comparison between the two works. Mr. Colton made some admirable remarks as to British sculpture. It was his hope that in the years to come a golden era for sculpture would come—when there would be a great school of sculpture in England that would mean something and would be vital. The first thing necessary to that end was faith in the artist—he must be allowed to say in his work what to him seemed good. Little encouragement was necessary to make sculpture blossom into glorious beauty, and to move the brains and hands waiting to move, and anxious to produce sculpture which should carry the message of the century down the age, and anxious to produce art which would be vital—and vital it must be to be of any worth.

The New Secretary of the Institute of Architects.

ALL who take much part in the proceedings of the Institute of Architects must have felt the importance of securing an adequate successor to the talented gentleman who has filled the office in so brilliant a manner for eleven years past. We are glad to believe that the right man has been found. Mr. G. Ian MacAlister, the new Secretary, brings very high recommendations from Lord Plymouth, the Earl of Dundonald (to whom he was for two years Secretary and aide-de-camp), and from two of the authorities of Merton College, Oxford, where he graduated. Mr. MacAlister was educated at St. Paul's School and at Merton College, where he won an Open Exhibition for Modern History; he was President of his College Debating Society, and took an active part in the political and literary life of the University; he was subsequently with Lord Dundonald in Canada, and has been engaged in journalism since his return to England. He also entered himself as a law student at the Inner Temple, and proposes to qualify as a Barrister, as a means of increasing his usefulness to the Institute. It will thus be seen that the new Secretary has considerable and varied experience of life and of the conduct of affairs; and we are sure that those members who may make his personal acquaintance will regard him as in every way a very satisfactory official representative of the Institute.

THE AQUEDUCTS OF ANCIENT ROME.—V.

BY DR. ASHBY, DIRECTOR OF THE BRITISH SCHOOL AT ROME.

THE aqueducts then pass through the Colle Faustiniano in tunnels, and then cross the Valle della Mola di S. Gregorio, each upon a separate bridge. The furthest down-stream is known as the Archi della Mola; the Staff Map marks it "Ponte dell' Antico Aquedotto Marcio," but the existence of remains of three other bridges higher up seems to demonstrate that it really belongs to the Anio Vetus, and the character of the deposit bears out the supposition. It must, however, form part of a restoration, for it is built entirely of *opus reticulatum* and brick, without any trace of earlier work in masonry. There are two tiers of arches, sixteen in the lower, nineteen in the upper; the former have an average span of 4 metres, though this is increased to 6·25 metres at two points, one at the crossing of the brook, the other at the place where the millstream runs under the aqueduct, and where originally another branch of the brook perhaps passed. (Fig. 11; *Plate*) shows a view of the central portion of this line of arches. The total length is 155·50 metres, the maximum height 24·50 metres. Five hundred metres further up-stream, *i.e.*, to the east, is the Ponte S. Pietro, which carried the Marcia. It is a bridge with a large single arch spanning the stream, and small lateral arches; it was orginally built of travertine, which is now entirely masked by concrete faced with brick, which serves to strengthen it. Like the other bridges in this valley, it is illustrated by Canina (*op. cit.* vi. tav. 145); while Fig. 12 is a view of the east side. One of its peculiarities is the disproportionate height of the portion above the arches, which is, indeed, divided by vertical pilasters; it is no doubt due to the diminution of the height of the arches by the later additions in brickwork; in the original structure the *specus* would have come much closer to the crown of the arches. Five hundred yards further up, the stream divides. Following first the main ravine, we come upon the ruins of two enormous bridges. Canina (*op. cit.* vi. tav. 146) gives reconstructions of them, the accuracy of which I should be sorry to guarantee. He also does not recognise what appeared to me to be perfectly clear, namely, that the constructors of the Anio Novus found themselves obliged to place the bridge down-stream from that of the Claudia, which would have been constructed a few years sooner. The channels of both aqueducts, and of the inspection shafts* belonging to them, can be seen on both banks; that of the Claudia measures 0·94 metre in width, and has oblong shafts, while the Anio Novus is about 1·20 metre wide, and has round shafts faced with *opus reticulatum*, 1 metre in internal diameter. The former seems to be at a level some 15 ft. lower than the latter, the crown of which is something less than a metre below ground level (225 metres above sea-level). The level of the stream at the Archi della Mola is 160 metres, and its fall from one point to the other is not great, so that we may give a height of at least 50 metres to the bridge of the Anio Novus.

The passage of Frontinus before referred to may, however, fairly be taken to refer to lines of arches, and not to a single bridge like this. These were by far the loftiest bridges upon the whole course of the aqueducts.

The remains of both aqueducts consist of massive piers with foundations of masonry, and a superstructure of concrete faced with brick; one of the piers of the Claudia, by the stream, measures no less than 10·20 metres in width, so that this was the width of the lower part of the aqueduct, owing to its great height; the pier itself is an irregular pentagon in shape. Among the bricks found among the ruins of this bridge, according to Petronselli (who speaks as if it may have fallen within his own memory), was one bearing the stamp *C. I. L.* XV. 1019 OPVS FIG. FORTVNATI. DOMIT. LVCIL. (*opus figlinum Fortunati Domitiae Lucillae servi*) of about 120 A.D. Similar masses of masonry and concrete, belonging to the Anio Novus, may be seen a little further down-stream. These aqueducts cross again before the left branch of the stream is reached; for here there is only one bridge, that of the Anio Novus, known as the Ponte dell' Inferno, some 40 yds. higher up stream than the channel of the Claudia, which can be seen quite low down in the bank. The Ponte dell' Inferno was a small single arch in *opus quadratum*, part of which has fallen, the *specus* of the aqueduct being of brick; the width of the former is 2·70 metres, of the latter 2·30 metres.

In the next valley, variously called Valle dei Morti, or Valle dell' Acqua Rossa, the four aqueducts all meet, and cross it by the famous Ponte Lupo. This is the finest of all the aqueduct bridges; the traces of the additions successively made to it, as new aqueducts were constructed, may still be clearly seen; and it has many times been

* The tops of these projected above ground level; it is therefore doubtful whether the *cippi* were needed to mark their position, as Hülsen thinks (*C. I. L.* vi., p. 3,124).

strengthened with buttresses and by filling up its arches, so that the greater part of the west side is now a solid brick wall (Fig. 13), though at one point on the left the progressive history of its evolution can be more clearly studied. On the east side, on the other hand, of which Fig. 14 gives a general view, the various additions can be plainly discerned. Canina (*Edifizi*, vi. tav. 147) gives plans, reconstructions, and views of it, which furnish a general impression, but require revision and amplification in details. The original bridge for the Anio Vetus measured, according to his calculations, 81·10 metres in length, 11·20 metres in height, 2·75 in thickness; when that for the Marcia was added, on the east side, these measurements were increased to 88·90, 16.60, and 12·00 metres; while by the addition of the Claudia and Anio Novus they rose to 155·00, 31·60, and 14·10 respectively.

The full width is not, however, carried right up to the top of the aqueduct, but only as far as the roof of the channel of the Marcia, the Claudia and Anio Novus being carried upon a narrower superstructure, 2·10 metres wide, which at first consisted of stone arches, but was later transformed into a solid wall of concrete, and perhaps made somewhat higher at the same time. The space above the level of the Marcia, which was not occupied by this superstructure, some 12 metres in width, served as a roadway, and now gives ample space for a group of peasants' huts; while upon the summit of the aqueduct there was a footway leading to the ventilating and cleaning shafts of the uppermost aqueduct. The question may arise as to the method in which, when one channel ran precisely above the other, repairs were effected to the lower. Canina (*Edifizi*, v. 66), indeed, asserts that near Roma Vecchia, where the Iulia and Tepula run above the Marcia, he detected apertures in the floor of their channels so as to allow workmen to penetrate into that of the Marcia; Lanciani, however (*op. cit.* 299) states that he failed to discover any traces of them, and that he only saw lateral ventilation holes.

At Ponte Lupo we may notice again the care taken to avoid too great a strain upon the bridge; the aqueducts are carried along the north side of the valley on lofty buttressed substructures for some distance, and then turn at right angles immediately before passing over the bridge.

To the west of the bridge, at some distance from it, I found a *cippus*, or boundary stone, of tufa, belonging probably to the Anio Vetus, lying in a field—a block of tufa 0·52 metre in width; it had a total length of 1·10 metre, of which 0·44 metre remained below ground, and in the centre of this portion was a round hole 0·20 metre in diameter, going right through the stone; through it, one would imagine, a beam was run so as to prevent it from being easily upset. Such a hole is a characteristic of these *cippi*. The inscription (if the stone bore one) was upon the lower side; but from its position one would have been inclined to suppose that it was the one bearing the number 669, seen by Garrucci in 1861, were it not for the fact that he records that the one he saw was of travertine—a somewhat surprising fact, considering that we are in a tufa district; and one wonders whether there may not be a slip in his description. The *cippus* of which he speaks, and another one, bearing the number 659 (also of travertine) were both copied by him *in situ* in two localities near Gallicano, but subsequent investigators have been unable to find them; the name of the aqueduct is, unfortunately, lacking, but, having regard to the fact that at Carciano the numbering of the *cippi* of the Marcia is ninety-five lower than that of the Anio Vetus (unless we have to suppose that No. 901 of the former had been brought a long way from its original position), these *cippi* should probably be attributed to the Anio Vetus (see *C. I. L.* vi. 31,570, a, b). For, at a distance of some 1,600 metres in a straight line from the point where the fallen tufa *cippus* lies, a tufa *cippus* still stands *in situ* of the same size, and bearing the number 645; the name of the aqueduct is not legible; but on the further side of the ravine (the Valle Serra) is another not *in situ*, bearing the number 626, upon which the name of the aqueduct ANI can clearly be read. Both are published by Lanciani in *Bull. Com.* 1899, 38: I have since verified the reading of the latter, and found that the number must be 645. If the usual interval of 240 ft., which occurs on each of these two stones, is preserved, the distance between the two must have been 1,350 metres, so that No. 626 must have fallen from the hilltop; and even so, it is a little difficult to make up so great a distance. For only some 300 metres in a straight line from No. 645 is a fine bridge, bearing the name of Ponte Taulella, or Tavolella (Fig. 15), marked under the former name in the Staff Map (which gives no indication of its nature), but otherwise absolutely unknown.

The total height is some 13 metres; and it is 13·40 metres wide at the base, which is formed of masonry of tufa. From this springs a brick arch, 4·10 metres in width, which has later on been reinforced on each side by a mass of concrete 4·65 metres thick, faced with brick and *opus reticulatum*. Some of the bricks of the arch still bear stamps, which we were, unfortunately, unable to read with an opera-glass.

The channel of the aqueduct, in *opus reticulatum* and brickwork, is 1·18 metre in width, and over 2·00 metres in depth, with characteristic dark crumbling deposit.

Some 700 metres further up the valley are the scanty remains (a few blocks of stone and a mass of concrete, still adhering to the south-west bank of the gorge) of a bridge which may be attributed to the Marcia. According to the plan published in Fabretti's *De Aquis et Aquaeductibus* (*opp.* p. 90, in the second edition only), which probably appeared originally in a controversial work of his against Gronovius, entitled *Jasithei ad Grunnovium apologema*, Naples, 1686,* in which he indignantly rebutted the criticisms brought by the Dutch scholar against his work on the aqueducts) the Claudia and Anio Novus crossed this ravine just to the north of the village of Gallicano. Here there are no traces of any ancient bridge; but the road bridge immediately to the south of Gallicano, which crosses the Fosso di Caipoli, is built upon an aqueduct bridge in *opus quadratum* of brown tufa, consisting of several arches, which is also indicated by Fabretti. It seems to have been about 3·10 metres in thickness originally (3·62 metres including some later strengthening in brickwork), and to have carried the Claudia and Anio Novus, as he also supposes.

The next road bridge, 4·70 metres in total thickness (originally 2·82 metres), constructed of the same materials, immediately to the north-west of the Ponte Amato of the Via Praenestina (*Papers, cit.* i. 208), seems to have carried the same pair of aqueducts; and in the cutting of Cavamonte, immediately to the south-west, two ventilating shafts on opposite sides of the road, both cut in the rock, and provided with footholes, may still be seen. That on the north-west was rectangular; the only side that can be measured is 1·46 metre long; the other is also rectangular (1·25 by 1·07 (?) metre), but had originally a round top, of brickwork, and is, therefore, probably that of the Anio Novus.

On emerging from the cutting, and crossing the modern road between Ponte Lucano and Zagarolo, which runs through the Valle Inversa, we see a long line of brick substructures, supported by buttresses. At the point where a small stream passes under it, there is a low single-arched bridge remaining; the arch was of large blocks, and carried the channel of the Anio Novus; this is 1·20 metre in width, and its walls, faced with brick inside, and *opus incertum* out, are 0·70 metre thick. In a period of fairly good construction this was strengthened by a wall of brick-faced concrete 0·74 metre thick on each side; the brickwork is good, and a small ornamental cornice in the same material was added. Further additions became necessary, however, and on the north side we find two successive additions, one 1·35 metre thick, faced with brick, the other a buttress 0·97 metre thick of late date, faced with *opus mixtum*; while on the south side a mass of concrete no less than 3·10 metres thick has been added.

Of the Claudia there are no certain traces at this point, though a curving wall of *opus reticulatum* may perhaps belong to it (*Papers, cit.* i. 205). After a short tunnel under the Colle Farina, the aqueducts reach the Ponti Diruti; but before we speak of these remains, we must return to the Anio Vetus and Marcia, which we had left in the Valle Serra. The former passes through the long narrow ridge to the south-west (the Colle Caipoli) by a tunnel; clear traces of deposit, marking a shaft, can be seen upon it. In the next valley (the Valle della Mola), close to the point of union of the Fosso di Caipoli and the Fosso Collafri, are remains which it is somewhat difficult to understand. The former stream turns at right angles just before entering the latter, and close to their junction was crossed by three single-arched bridges of *opus quadratum*, side by side. The furthest upstream is the lowest, and is 3·50 metres wide, the next, at about 2 metres distance, is rather higher, and is 4·50 metres wide. On each side of it is the *specus* of an aqueduct 1·24 metre wide, with a pointed roof formed of two slabs 1·20 metre long and 0·42 metre thick, inclined towards one another. The deposit on the roof (where the foulest material would not be found) is hard and crystalline, and looks like that of the Aqua Marcia; there are, however, as we shall see, bridges which must be assigned to this aqueduct further up both streams, so that the conclusion that we here have the Anio Vetus seems inevitable. There is yet another bridge, which now carries a footpath, the only one of the three which still preserves its arch intact. It has two rows of voussoirs, each about 0·38 to 0·40 metre deep, while the horizontal courses are 0·45 metre high; and it is only 1·70 metre wide, and 10·50 metres in length. It does not seem to have carried an aqueduct, and, indeed, there is no trace of any other channel hereabouts beyond the one already referred to. A little further down on the south-east bank are some remains of a lofty construction in *opus mixtum*, against one side of which is a great mass of aqueduct deposit 6 ft. thick; while on the north-west are traces of structures which may have been clearing tanks, with a rock cutting about 0·50 metre wide, intended perhaps for the discharge of waste water into the stream. Further on again are apparently the remains of a villa.

The aqueduct, instead of crossing the second stream (the Fosso Collafri) at once, seems to have run a little way up the valley, for on its north-east side, by the road to a modern mill, are three shafts lined with *opus reticulatum*, each about 1·20 metre square, at a distance of 31·75 metres (about 107 Roman feet) from one another. One would suppose that these might be connected with the aqueduct, though the interval is shorter than usual. The exact point where it crossed the stream cannot, however, be determined. It might, indeed, be supposed that it continued to run upstream for another 500 metres, and then crossed by a small and well-preserved bridge, which still exists, and is known as the Ponte della Bulica, were it not for the fact that there is another bridge in the next valley to the north-east (that of the Fosso di Caipoli) which must be assigned to the Marcia, and which corresponds in position with this one. We must, therefore, assume that the exact point of crossing of the Anio Vetus has been lost, and temporarily (until the question can be settled by

* The book is a rare one, and is mentioned by Cicognara, *Catalogo*, ii., No. 3,709.

exact determination of the levels of these bridges) assign these two to the Marcia.

The north-easternmost of them is a lofty concrete structure in two tiers,* while the other is a small structure 3·33 metres in width, with a single arch of *opus quadratum*, which seems to have at one time supported a roadway; for the channel of the aqueduct, 0·70 wide at the bottom, lined with cement, 0·22 thick on each side, runs immediately on the north-west of it, using part of it, indeed, as its outer wall, while on the south-east its outer wall is of brick-faced concrete of a not very good period. This is obviously not the original arrangement; for the bridge is in *opus quadratum* of the finest style (Fig. 16), 5·85 metres in span, 5·50 in height, and 10·60 in length. The deposit in the channel seems to be like that of the Marcia, and there are no traces of the fouler deposit of the Anio Vetus.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AN ordinary meeting of the Royal Institute of British Architects was held on Monday at No. 9, Conduit-street, Regent-street, W., Mr. T. E. Collcutt, President, in the chair.

The minutes of last meeting were taken as read.

Deceased Members.

Mr. E. T. Hall, Vice-President, who acted as hon. secretary owing to the indisposition of the hon. secretary, Mr. Alex. Graham, announced with regret the decease of J. B. Colson, Architectural Surveyor to the Dean and Chapter of Winchester Cathedral, who was elected a Fellow in 1892; and also E. Lewis Galizia, of Malta, elected a Fellow in 1888.

The New Secretary.

The President said that the Council had nominated Mr. G. I. MacAlister as the new secretary of the Institute. Mr. MacAlister was elected unanimously by the committee appointed by the Council to interview the various candidates, and he was subsequently elected unanimously by the Council.

The Late Secretary.

A list of candidates for election at the next business meeting was read. The list includes the name of Mr. W. J. Locke, M.A. Cantab. the late secretary, who is to be elected as an Hon. Associate.

The Royal Gold Medallist.

The President also announced that the Council's nominee for the Royal Gold Medal was M. Honoré Daumet, of the Institute of France, and hon. corresponding member of the Institute. To most members of the Institute M. Daumet's work was thoroughly known, and he had been a great architect in France for nearly half a century, and he (the speaker) felt sure that the Institute and the Profession generally would feel that they could not have honoured a more worthy man than M. Daumet with the Royal Gold Medal.

Grinling Gibbons Carving.

He also called attention to some Grinling Gibbons carving which had been lent by Mr. George Hubbard, and which was removed from the chapel of Winchester College some years ago. Mr. Hubbard had lent it to the Institute, for the members to see and to learn from.

Greek Art.

The President, in calling upon Professor Lethaby to address the students, said that the usual practice on the occasion was for the President for the time being to deliver an address to students. As President, he delivered an address last year, and he had thought that perhaps he had exhausted his advice to students, and that it would be wise to get someone who was more in touch with the forward education movement to read an address, and he thought it was an inspiration of his to get Professor Lethaby to deliver the address.

We take the following from Professor Lethaby's paper, as it represents his principal conclusions:—

"The Greek ideal of proportion cannot be brought back; and, indeed, to some extent it may have been mistaken, but we can well see how the thought arose. At a time when the laws of geometry and music were being collected and investigated for the first time, when the paths of the stars were being mapped out, and language and politics were all being systematised, it was natural to search for the lines and measurements of the perfect building, musical in beauty, an expression of eternal law.

Perhaps we are now in a position to imagine what the orders were to the Greeks. The pillar and its beam were the most important and highly developed members of the structure; on the mainland they were perfected along narrow lines, and with their details became that very curious assemblage of parts which forms the Doric order. Change, design, originality, were all excluded. The pillar was their own inherited pillar, the germ of a perfect type which they were to discover by experiment and adjustment. In the great colonies of Asia Minor another type of column and beam was developed from a primitive original, and at last obtained in Greece proper an almost equal authority with the Doric order. Both of them were probably held to have been from the beginning like male and female (an image, indeed, which Vitruvius uses for them), each perfect of its kind. These are, properly, the only Greek orders; the Corinthian, as Choisy notices, is but a variety of the Ionic, and arose only at a late time, when the spirit of variety was entering into the classical art which it was to disintegrate. Each of the two great orders had essential character to be developed in differentiation. To mix their traits was to go against their proper genius. As well might one mix beef and mutton, or claret and hock.

Before passing on I should like to separate distinctly the two chief characteristics of Greek art which have engaged our attention.

I. By its historical position it was near to the primitive. It carried forward many features as inherited traditions. Such, for instance, were its triglyphs and guttæ, its stout columns and stone beams; and these were, in a sense, sacred. While writing this I have found this condition well summed up in a phrase by Mr. Berenson, the able critic of the Italian masters. 'No art,' he says, 'can be classic unless it has been also archaic.'

II. It was shaped by a philosophy according to which that which it inherited was not accidental, but the germ of an architecture complete and absolute. Its object was to go forward in unfolding the possibilities contained in this code, not widening its scope, but rather narrowing and deepening it. Originality in the modern sense was foreign to it. It sought to develop and fix types, to grasp the perfect and the lasting.

The problem which the study of Greek art or of Gothic art opens before us is not properly as to what they did, but how they did it as a process; and the question how we, too, may lay hold on destiny. The Gothic law of adventurous energy and the classic law of development from within are both needed. It is not finding or inventing of features that will do anything for us; no individual search for proportion, beauty, or design can help without a wide basis of agreement. What we do want in our art to-day is: exact knowledge—engineer's, planner's, workman's knowledge; discipline—the training of a school which shall prune away mere excrescent fancies; and, above all, agreement—a voluntary subjection to reason, seriousness, reverence. It has sometimes been doubted whether a true school of art can be maintained in a highly developed and critical civilisation, but the study of Greek art seems to give a hopeful answer, although all hinges, now as then, on the possibility of finding a basis of agreement. If there is no general consensus as to the way in which work should be done, there is no mould for development to run in, but only little spasms of fashion. As George Eliot has remarked, 'Great and precious origination can only exist on condition of a wide, massive uniformity. When a multitude of men have learned to use the same language, then, and then only, can the greatest masters of language arise.'

The artist cannot for long be a creature unsupported in the air. He has, on the contrary, to find his support in ordinary life, common needs, and the sympathies of his fellows. On such a basis were the great pyramids of art of the past reared. A real process of development was set up by which the infinite possibilities hid in life, nature, and materials were continuously explored and built out step by step beyond the sphere of the known. The artist then was a medium through which the nature of things was discovered. Art was not volition, it was revelation. Now with our genius and originality we are all little separate pyramids six feet high at most; our arts are one man thick, not ten thousand men thick.

We moderns cannot be classic in one sense, for we are far away from the primitive, and inherit no sacred, archaic customs of building. All architectures, however, in civilisations of the modern kind will have, to some extent, to be classic, just as they will also have to be Gothic in energy and fearless experiment on the side of structure. There is nothing, however, so far away from the classic spirit as some of the modern works which would claim the name of classic. The heaping together of degraded borrowed forms in a promiscuous debauch of what is called design has, of course, nothing in common with the serene and clear genius of the Greeks. Some phases of the so-called Gothic style, such as the Cistercian abbeys, in England and the north French cathedrals, notwithstanding all the unlikeness of the forms, approach very near to the classic spirit. Greek and Gothic alike teach that no great architecture can be the light and lax exercise of will and whim.

For a few last words I should like to draw a little nearer to the students' competitions, the subject which brings us together to-night. I am heartily glad that no detailed notice of the drawings is expected from me. . . . Students should make some effort after the classic spirit, and towards agreement amongst themselves—a little common ground is better than none, and if all the able and enthusiastic men of this year could get together they might decide what was to be the course of English architecture during the next twenty or thirty years. If they decided wisely to study scientific construction and convenient planning, to endeavour constantly to improve what we have and know, and to throw out the irrational element in modern architectural design; if they agreed on their scholarship travels to do some definite and exhaustive pieces of architectural study; if they even encouraged real, common-sense draughtsmanship, colouring and lettering—undoubtedly great good would come of it. A few young men meeting together as pre-Raphaelites altered the whole course of English art. It is vain to expect this agreement from older men; they have passed beyond the stage where it is possible, and are thinking of other things; but I should like the youngsters to form a union and settle that reason shall rule in architecture for a generation."

Criticism on Students' Drawings.

Mr. E. Guy Dawber then read a review of the works submitted for the prizes and studentships of 1908.

Mr. Dawber said that on looking round the gallery at the Alpine Club and con-

* In *Papers, cit.* i., map iv., I have conjecturally assigned this bridge to the Claudia, but, I now think, wrongly.

templating the exhibition of drawings, and considering the enormous amount of thought and labour which their production entailed, the task of reviewing this work and holding the balance fairly between undue praise and narrow criticism seemed indeed a difficult one. He had spent many hours during the past week in examining these 444 sheets of drawings, and at the end he came away with the conviction that if we had such earnest and painstaking students as these in our profession there need not be much misgiving about the outlook for the future. The Institute was to be heartily congratulated on the excellent display this year, and with perhaps one exception—that of the Soane—all the work submitted was of a high order and more than maintained the standard of former years. The number competing was exceptionally high, being no less than ninety-four against the sixty of last year. It was interesting also to note that the prizes which were of the least monetary value had attracted some of the keenest competition, and this, again, was most gratifying, as it showed an enthusiasm on the part of the students quite apart from the reward offered. The quality of the draughtsmanship was higher than of late years; and although it was possible to exaggerate the importance of good drawing, yet all would admit that the art of expressing one's ideas on paper with power and facility was of immense advantage, and that no really able architect was ever a bad draughtsman. For this reason, if for no others, he would urge all the students to cultivate drawing, and to study the best examples and try to emulate, if not surpass them. On looking at the designs as a whole, it seemed to him doubtful if they had taken sufficient care thoroughly to grasp the problems set—whether they had understood and appreciated the conditions and realised that a building should be made to express its purpose in its design, and that this quality was the very essence of good architecture. In the competition for the Soane Medallion, for example, by many competitors the primary object of the building seemed to have been entirely overlooked. The subject, a Custom House, at once suggested a building, quiet almost to severity in its lines and grouping, having a sternness and dignity in keeping with the dangers and vicissitudes of the sea; yet almost without exception it had been treated in much too municipal a spirit, and grandiose erections more like town-halls and libraries had been designed. Again, he noticed how much some students were influenced in their ideas by the passing fashion of the day: some noteworthy building was erected, and immediately any striking or unusual feature in it was borrowed and applied without regard to its suitability. He felt that students should learn to study buildings and not to copy them, and that a more severe and scholarly type of design should be encouraged in these competitions, though with our present system of education this, perhaps, was somewhat difficult.

Mr. Dawber then reviewed the various works sent in. In speaking of the Essay Medal, he said it was much to be regretted that the literary side of our profession should be to a great extent neglected. This was hardly to be wondered at, for so few, he feared, read these essays. A student aspired to compete for a prize where he could at a glance compare the result of his own work with that of his fellows. It was, undoubtedly, a great advantage to be able to express his thoughts and ideas in well-chosen language as well as in beautiful drawings.

In referring to the Measured Drawings competition, he said it should be remembered that it was not only the finished drawings exhibited on the walls that had gained the prizes, but that to a large extent the Council had been influenced in their award by the original sketches and plottings made on the spot. This prize might be regarded as one of the most useful the Institute offers. It was essentially for the study of some complete building. The importance of such work should not be overlooked, for the knowledge gained by students who had mastered the design, planning, and detail of a building of recognised merit must be of great value.

As to the Pugin Studentship, he said he felt that a point to be borne in mind by competitors for the Pugin was that more attention should be given to the production of analytical studies and sketches rather than to pretty perspectives. The bold sketch with detail vaguely suggested was not of such ultimate value to the student as that which showed an attempt to get at the dry bones of the subject, as well as the pictorial exterior. And also that, as this prize was essentially for the study of mediæval architecture, the work submitted for it should be more or less Gothic in character. Much of the work sent in would not be classed under that head at all, though he was aware it was in accordance with the conditions.

Professor Reginald Blomfield, A.R.A., who was called upon by the President to propose a vote of thanks to Professor Lethaby and Mr. Dawber, said they were all pleased to hear from Mr. Dawber that the students had made such a good show of work, and Mr. Dawber had made some very sound criticisms. As to Professor Lethaby's paper, he thought it was one of the most suggestive papers read in that room for many years, but it was exceedingly difficult to follow the high train of thought, and he should have liked the opportunity of reading it before speaking. Professor Lethaby rather surprised him by treating Greek art as a sort of brilliant efflorescence in a short space of years. He did not think that was historically correct. Greek art was a very old matter indeed, and it was a very beautiful art in the time of Pericles and could be no sudden growth, and it must have been a matter of many years of development. He felt sympathy with Professor Lethaby in another matter. Professor Lethaby was dealing with a great subject, and it was impossible for him to cover the whole field, and he omitted all reference to Roman architecture or building. To him (the speaker) Roman architecture was the most important legacy of antiquity, and we owed to the great Roman constructors more than to any one in the past, and there was a great deal that was very suggestive in Roman architecture that we ought to study. He agreed with Professor Lethaby generally, but not in all points. There was the old and favourite question concerning proportions, about which Professor Lethaby had some salutary remarks to make. The lecturer's concluding suggestion was one of the best he (the speaker) had ever heard—*i.e.*, that the younger men should come together and try to help their art along. But he did not agree with all Professor Lethaby's suggestions to students: but he was one of our most brilliant and original thinkers and the keynote of his career had been an intense enthusiasm for architecture.

Sir Aston Webb, R.A., in seconding the vote of thanks, said he agreed with the last remark made by Professor Blomfield. There was nothing more useful amongst such a practical body as architects than to have some men who gave the time and took the trouble to think for others and to give them the benefit of their thought. Professor Lethaby had done so several times, and although they did not always agree with him at first, yet, after a time, what Professor Lethaby thought to-day a great many other people thought to-morrow. As Professor Blomfield had remarked, the present paper was very brilliant and suggestive, there was a depth of originality about the suggestions which would make them all think. The end of the paper was a most delightful in suggestion, and he hoped the young men would act on the advice. He had great faith in the usefulness of young men meeting together and thinking over their work, for that was more likely to result in good than the addresses of the older men of the profession; it was vital, and was more likely to lead in the future to the advancement of architecture, and it was to the young men that we looked for another step onward. During the Gothic revival there was great enthusiasm, but since that died out there had been wanting a rallying point round which enthusiasm might gather, and it was a suggestion like Professor Lethaby's that should give rise to it. As to Mr. Guy Dawber's remarks, it was of great encouragement to young men to hear a short review of their work. Those who had not won prizes knew that their work had not been overlooked and that it was appreciated. They had all seen the drawings this year, and were greatly struck by the enormous amount of painstaking and beautiful work which had to go, unfortunately, unrewarded as regarded prizes, but not unrewarded to the authors. There must be great pleasure in doing such work, as others had in looking at it. He did not remember a finer year of beautiful drawings.

The vote of thanks was then heartily agreed to, and the President distributed the prizes and awards to the successful students in the recent competitions. A list of the successful candidates appeared in our issue for January 25, p. 92.

The Chairman announced that the next meeting will be held on Feburary 17, when Mr. Francis Fox will read a paper on "Foundations, the Use of Divers and the Grouting Machine."

The meeting then terminated.

BRITISH SCHOOL AT ROME.

THE first open meeting of the British School at Rome was held in the Library of the School on Thursday, January 30, at 5 p.m. The Director (Dr. Thomas Ashby) read the first paper, which dealt with a volume now in the library of Mr. C. W. Dyson Perrins, containing, on thirty-eight vellum leaves, a series of views of Rome, with portions of the text which originally accompanied them. It would appear that the volume was prepared for presentation to some wealthy patron, for the text, as far as it is at present preserved, does not seem ever to have been published. A subsequent owner destroyed the greater part of the text, caring only for the leaves bearing views, which, when they had text at the back (for both sides of the leaf were used), he gummed together; so that the decipherment of the scanty remains of the text, which is clearly written enough, is sometimes a matter of difficulty when the two leaves have stuck together.

The views are alternately views of the remains of the ancient city as they were at the time the drawings were made, and restorations of ancient buildings as they were supposed to have been by the antiquaries of the end of the XVIth century.

The date in the title, 1490, is certainly wrong by about a century; about 1580 would be, from internal evidence, a probable date; but it seems more likely that we should read 1590, and suppose that the drawings were not brought absolutely up-to-date, but were after sketches made some years before.

Of the drawings, many, both of the actual views and of the restorations, are absolute copies of, while others are closely allied to, some engravings after Étienne Duperac (whose work the volume may possibly be), published in Rome a few years earlier—an album of views called "Vestigii dell' Antichità di Roma" (1575), and a large bird's-eye view of ancient Rome as restored, entitled "Urbis Romae Sciographia" (1574)—but others are independent of these sources, and some contain features hitherto unknown, while there is also a certain amount of new information in the fragments of text preserved.

Thus, one of the views shows a project for the improvement of the defensibility of Castel S. Angelo by the cutting of the last arch on the right bank of the Ponte S. Angelo, and the substitution of a drawbridge, the traffic towards the Borgo and S. Peter's being taken by the Pons Triumphalis or Neronianus, which was to be restored for the purpose. The reconstruction of this bridge had been contemplated by Pope Julius II. (as we learn from Albertini—"Opusculum de Mirabilibus novae et veteris urbis Romae, 1510," pp. 12v, 95v). The scheme would have involved the demolition of a considerable portion of the Hospital of S. Spirito, which now, after surviving for over three centuries, is once more threatened by the projected Ponte Vittorio Emanuele, which is intended to cross the Tiber at the end of the Corso Vittorio Emanuele. Other points of detail come out in an examination of the text, from one passage of which it seems clear that the famous bronze pine cone, now in the Giardino della Pigna at the Vatican, did not come to the forecourt of the old church of S. Peter before the XIIth century, and stood previous to that in the neighbourhood of the Pantheon, giving its name to the mediæval region (Rióne della Pigna).

The second paper, by Mr. A. H. S. Yeames, M.A., Assistant Director of the School, dealt with the large sarcophagus from the Ludovisi Collection, which, with the rest of the sculptures from that collection, is now in the Museo delle Terme. The front of it is decorated with a relief, crowded with figures, representing a battle between Romans and Barbarians. From the style it seems to belong to the first half of the IIIrd century A.D. In the centre of the upper portion the bareheaded figure of the Roman general is prominent, and its obvious importance leads to the belief that it is a portrait. The same personage is, in fact, represented in a bust now in the Sala delle Colombe (so-called from the mosaic of the doves from Hadrian's villa which has been placed there) in the Capitoline Museum; there seems to be no doubt of the identity, and in both cases there is a small incised cross on the forehead—not a Christian symbol, and of quite uncertain meaning; but bearing all the marks of antiquity.

Various attempts have been made to identify the personage represented, but none of them seem to rest upon sufficient grounds. The dress of the Barbarians points to their being Orientals and, presumably, Persians, and the style of the monument points to the second quarter of the IIIrd century A.D. approximately. Now, between the wars of Septimius Severus and the capture of the Emperor Valerian in 260 A.D., there were three expeditions to the East, only one of which, that carried on in the reign of Gordian III., under the leadership of that emperor's father-in-law, C. Farius Timesitheus, was successful, leading as it did to the recovery of the whole of Mesopotamia. It is probable, therefore, that the latter is the person represented on the sarcophagus and in the bust.

Both papers were illustrated by lantern slides, and the meeting was well attended.

NOTES FROM SCOTLAND.

Proposed New Bridge at Glasgow.

AT a recent meeting of the Clyde Navigation Trust held in Glasgow the question of additional quayage and cross-river communication was under consideration. Dean of Guild Mason, a member of the Trust, submitted a scheme which he explained would go far towards the solution of this problem, which had been at various times discussed since 1873. At present there is no bridge west of Glasgow Bridge, and when it is borne in mind that the city of Glasgow, including Partick and Govan, extends for some miles in that direction, the need for improved cross-river facilities can be readily understood. Vehicular traffic is conveyed across by means of ferries at one or two points, but these have not been able to cope with the immense amount of traffic, and more especially since the closing within the last few months of the Harbour Tunnel, a private undertaking which never seemed to be popular and could not compete successfully with the opposition it had to face. The problem before the Trust is no easy one. Laying aside the question of additional quayage as a problem by itself (though in Mr. Mason's plan it forms an integral part of the scheme), it occurs to one that a high level bridge with a 75 ft. waterway would be the most natural plan to follow. The difficulty in this is really a question of levels necessitating long approaches which, together with the purchase of property necessary, must materially affect the cost. Mr. Mason's scheme includes the forming of a new front on the south side of the Clyde and widening the river to admit of an island pier with passageways to admit of vessels entering and leaving berths higher up the river. The north side of this pier he would utilise as berths for vessels, thereby increasing the quayage. A double swing-bridge would be constructed at the east end of the pier with an additional bridge from the west end to the north bank of the river. By adopting this scheme the steep gradients would be entirely done away with, and from an economic point of view it has much to recommend it. Space would be provided for a double line of car rails, two lines of vehicular traffic with footpaths 9 ft. wide on each side.

There is a general feeling in the city that the Corporation of Glasgow, together with those of Govan and Partick, should combine with the Clyde Navigation Trust to secure the most eligible site, as its position must affect for all time the means of communication on the lower reaches of the river. It is certain the Glasgow Corporation cannot increase the car traffic over the other bridges, and advantage would be taken in this new bridge to carry over some of the lines going westwards, and thereby relieve the congestion of traffic so common in the centre of the city. The matter is still under consideration, and it will be interesting to note what progress the science of engineering has made since this problem was solved at the construction of the Manchester Ship Canal.

Holyrood Chapel Restoration.

Lord Stair, the Provost of Stranraer, made an important statement in regard to Holyrood Chapel restoration at a meeting of the Annual Committee of the Convention of Burghs in Edinburgh. Councillor Rusk introduced the subject by saying that members of the committee would have noticed that a deputation had been present at the Edinburgh Town Council and had interested the members of the Conncil to the extent of getting a remit to the Lord Provost's Committee. Lord Stair said it was stated that the King had declined to sanction the restoration of Holyrood Chapel. This his lordship had on the authority of one of the trustees. It was very much to be regretted that this matter had not been made public at first, and thus saved all the trouble about an English architect and so forth.

Edinburgh Dean of Guild Court.

At the last meeting of this court there were fourteen cases on the roll, and plans were either passed in regard to twelve of these or remitted to the Burgh Engineer. Among them who received warrants was the North British Railway Company for platforms, etc., at Balgreen-road in connexion with the Scottish National Exhibition.

Seaforth Sanatorium, Dingwall.

The Seaforth Sanatorium at Maryburgh, Dingwall, has been formally opened by Mrs. Stewart Mackenzie, of Seaforth, in presence of a large gathering, representative of the county, including members of the County Council, etc. The Seaforth Sanatorium is gifted to the counties of Ross and Cromarty by Colonel and Mrs. Stewart Mackenzie, of Seaforth, who have built and equipped it and are about to endow it for all time, coming by a gift of 100,000*l*.

The sanatorium is for the treatment of consumption in its incipient stages, and so far as there is a reasonable prospect of a cure being affected. The sanatorium occupies a charming site on a plateau about 200 ft. above sea level, and is situated on the Brahan estate above Maryburgh and one and a half miles from Dingwall.

New Corn Market, Edinburgh.

A sub-committee of the Market Committee of the Edinburgh Town Council are considering the detailed plans of the new Corn Market at Gorgie, Edinburgh, and have agreed to obtain estimates for the work and also for the new slaughter houses. It is expected that the work will be proceeded with at once, according to the committee's plans.

Action by the Duke of Montrose.

An arbiter has been appointed to adjudicate in a claim by the Duke of Montrose against the Glasgow Corporation in connexion with the raising of the levels of Loch Arklet. The claim is for damages to the Duke's lands in consequence of the proposed operations, and amounts to 26,500*l*. The sum claimed is stated to be compensation for the permanent injury and damage to be sustained in respect of the lands to be taken and submerged or otherwise affected in connexion with the raising of the level of the loch and of all loss and injury to the claimant's lands arising from the operations of the Corporation, including the wayleave rights to be acquired by them.

St. Mary's Episcopal Church, Glasgow.

Since it was decided last year that St. Mary's Episcopal Church, Glasgow, should be raised to the status of a cathedral, the vestry and congregation took immediate steps to proceed with adequate accommodation for additions required under the new régime. These new buildings have now been completed. The ground available for the extensions was too small for all that was required, but the architect, Mr. H. K. Bromhead, F.R.I.B.A., has erected on the space outside the north transept a bishop's vestry, a hall with accommodation for about 200 people, where synod meetings and other gatherings may be held, a business vestry, and other offices, numbering in all eight rooms. These buildings are connected to the church by a door at each end, and they are erected and furnished with skill and taste in harmony with the architecture of the church.

Proposed Technical College at Aberdeen.

The Aberdeen Town Conncil have had under consideration the question of undertaking the responsibility for the erection and maintenance of the proposed Technical College for Aberdeen and the North of Scotland. It was agreed to forward to the Scottish Educational Department a reply to their communication, and to inform them that the Town Council are prepared to co-operate with the promoters to undertake the responsibility for the erection and establishment of the proposed Technical College, and that they are prepared to act as interim administrators of the department's contribution of 40,000*l* till such time as a suitable body is formed which may share the management and divide the financial responsibility. A special committee was afterwards appointed to report as to the capital cost of the College and funds available and all questions of management and construction and to report.

Proposed Arts and Crafts Exhibition, Edinburgh.

The Executive of the Scottish National Exhibition has decided to proceed with the Arts and Crafts section of the exhibition to be held in Edinburgh this year. It is

proposed to restore some of the old rooms in Saughton Hall and make use of them for the section. In the building is a specimen of the XVIIth century ceiling in one of the rooms, and it is proposed to remove the partition which at present disfigures it and restore the ceiling. The Educational and Historical Committee, besides arranging for exhibits from the technical colleges, art schools of Scotland, etc., act in conjunction with the women's section for special exhibitions of kindergarten school, and exhibits from special schools (for the blind, etc.). For the purpose of this competition Scotland has been divided into districts and each district will be allowed to exhibit for one week.

Crieff Sewage Purification Works.

The Crieff Town Council have held a special meeting to consider the estimate by Mr. Gilbert Thomson, C.E., Glasgow, of 14,000*l.* on the cost of the proposed sewage purification works. It was resolved to borrow 14,000*l.* from the Public Work Loan Board to carry out the work.

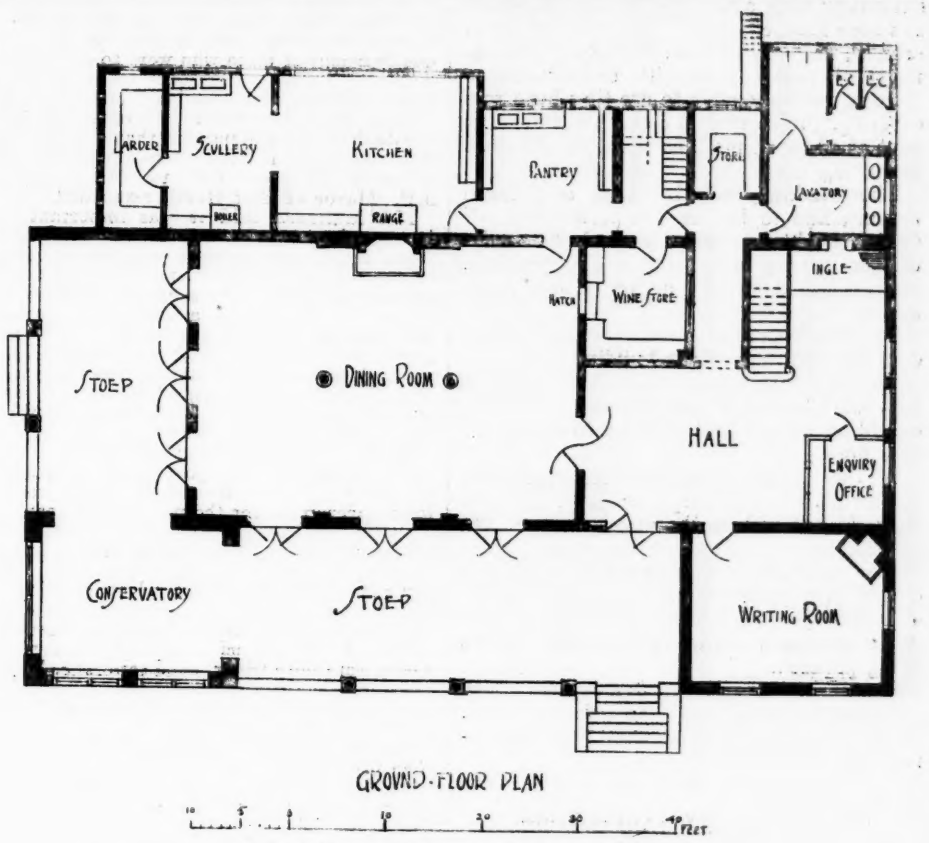
Royal Scottish Exhibition, Edinburgh.

The loan collection at the forthcoming annual exhibition promises to contain many interesting works. These will include a large representation of the Saviour on the cross, entitled "Redemption," by Mr. J. S. Sargent, R.A., R.H.S.A., two works by Auguste Rodin, the French sculptor, who was elected an honorary member of the Scottish Academy at the same time as Mr. Sargent, single works by G. J. Frampton, R.A., F. W. Pomeroy, A.R.A., and Alfred Drury, A.R.A., and others.

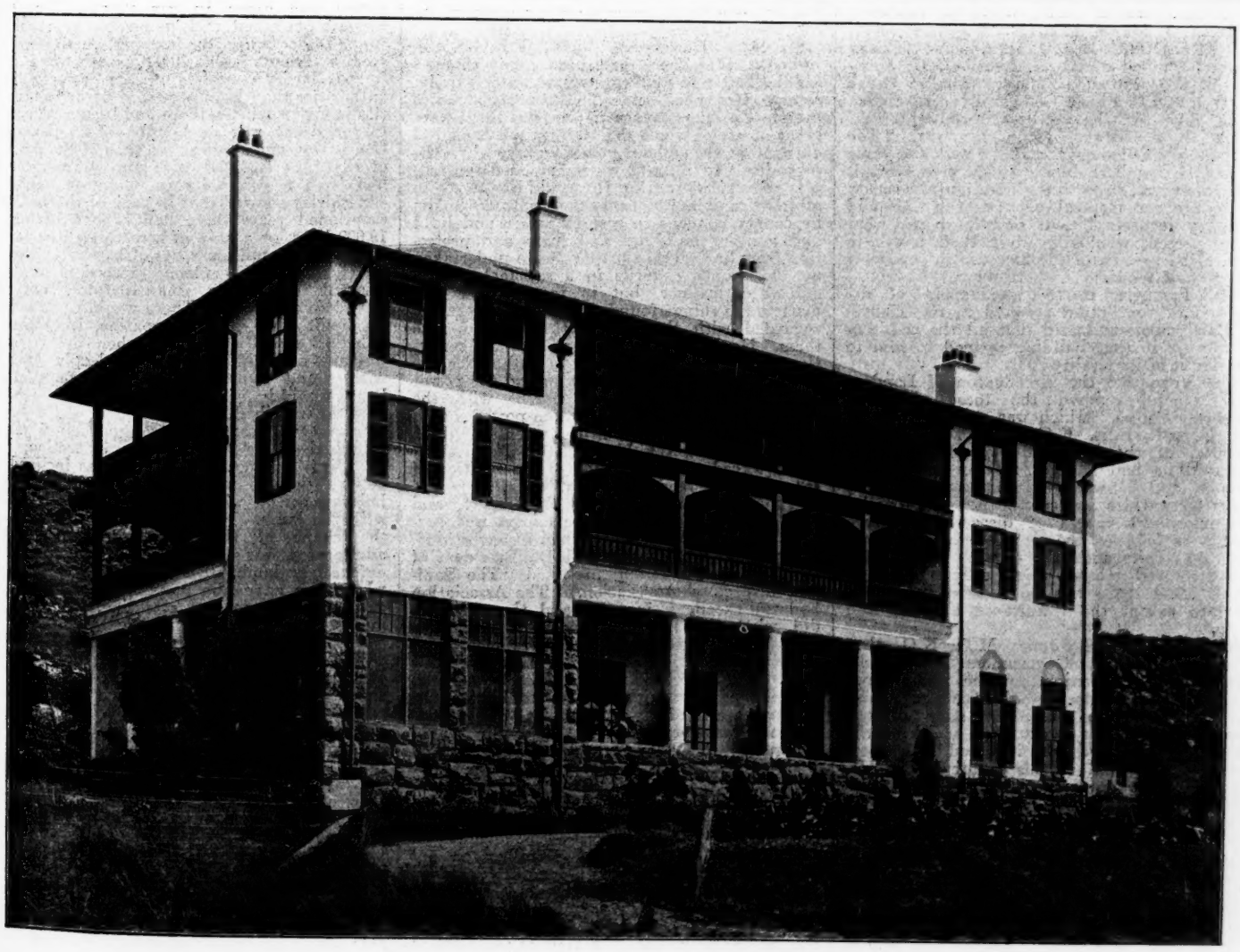
HOTEL AT ORANGE-GROVE, JOHANNESBURG.

THIS hotel, which was completed a year ago, is situated in one of the most picturesque suburbs of Johannesburg and commands a most extensive view of the surrounding country. The proprietor, who happens to be a florist and market-gardener on a large scale, has laid out the grounds of the hotel most admirably; unfortunately, the photograph was taken before this was done. The building was built for the Johannesburg Consolidated and Investment Company, and the strictest economy had to be observed in the external treatment.

The foundations and lower portion of ground floor are built in stone from the adjacent kopje, the rest of the walls being of brick faced with plaster, which is treated



Orange Grove Hotel, Johannesburg. Plan.



Orange Grove Hotel, Johannesburg. Mr. H. Seton Morris, Architect.

externally with a waterproof solution which has been most effective. The columns are of cement, similarly treated, the upper verandas being of pine coated with carbolineum.

As it was impossible to use tiles for a roof covering, the inevitable corrugated-iron was kept at as low a pitch as possible with deep projecting eaves.

The windows, for the same economical reasons, had to be the "imported sashes" (which might be made so much better by thicker glazing bars); the doors, however, were designed by the architect and made locally.

The diagram of the ground plan sufficiently explains this part of the building.

The first and second stories are occupied by bedrooms and bathrooms, with the exception of a ladies' drawing-room on the first floor.

All the windows in the hotel have mosquito casements, which is very necessary, although they do not add to the appearance of the interior.

The woodwork on ground floor is of pine coated with carbolineum, the plastered walls of hall and staircase being whitewashed, the other interior walls of the principal rooms being papered.

The contractor was Mr. James Thompson, of Johannesburg, and the architect Mr. H. Seton Morris, of Sauers-buildings, Johannesburg.

THE SANITARY INSPECTORS' ASSOCIATION.

THE twenty-fifth annual dinner of the Sanitary Inspectors' Association was held on Saturday last week in the Grand Hall, Hotel Cecil, Strand, Sir James Crichton-Browne, M.D., LL.D., F.R.S., President, in the chair. There were also present, among others, Venerable Archdeacon Sinclair, D.D., Sir David Gill, K.C.B., LL.D., Sir H. Ellis, K.C.B., Sir Lauder Brinton, M.D., LL.D., Sir Dyce Duckworth, M.D., His Honour Judge Rentoul, K.C., LL.D., Messrs. W. D. Caröe, H. D. Searles Wood (Chairman of the Royal Sanitary Institute), E. White Wallis (Secretary of the Royal Sanitary Institute), Baldwin Latham, F.G.S., L. Atherley-Jones, M.P., K.C., G. Lambert, M.P., J. J. Marks, M.A., G. D. Kelley, M.P., A. G. Duck, T. G. Dee, G. H. Anderson (Chairman of Council of the Association), H. Johnson, J. T. Quinton, H. Youngs (Messrs. Higgs & Hill), and C. Fraser (Messrs. Burn Brothers).

The loyal toast having been honoured,

Mr. J. J. Marks, M.A., proposed "The Houses of Parliament," coupled with the name of Mr. G. Lambert, M.P. In the course of his remarks he referred to the question of security of tenure for medical officers of health and sanitary inspectors, and said he hoped that those present would do all in their power to secure the passing of the measure in favour of security of tenure.

Mr. Lambert, in response, spoke of the method of ventilation adopted in the Houses of Parliament, and said that all the coddling of the air in that building seemed to him to deprive it of its vitality.

The Venerable the Archdeacon of London, D.D., then proposed the toast of "The Imperial Forces," which was responded to by Sir Herbert Ellis, K.C.B., LL.D., Director-General of the Navy Medical Department. He said he had a great interest in sanitary science, and he was glad to meet those who carry on warfare against the powers of evil—the insanitary causes of disease—a warfare which, as long as the world endured, would have no respite and have no end. As one foe was destroyed another would spring up in its place. And there was no reward in such a warfare except the reward of a work well done.

Mr. L. A. Atherley-Jones, M.P., K.C., then proposed "Local Government." For the liberty which we enjoy, for the well-ordered condition of society by which we are now environed, for the wealthier state of our population, and for the greater health of the people we are in the main indebted to the local government system of this country. The history of local government might be traced farther back than the history of any royal dynasty. There was an overlapping of authorities and a mingling of official duties, but we might congratulate ourselves that at the end of the XIXth century we witnessed an immense advance in the practical methods of local government. There was growing expenditure, but it was a beneficial expenditure. It involved a great local debt, but it was for the benefit not merely of posterity, but of generations that were to come hereafter. One of the objects of the Association was that on the Board of Examiners whose duty it was to secure the qualifications of those who were to perform the duties of sanitary inspectors there should be representatives of the sanitary inspectors' profession, and it seemed ludicrous that they should have to contend for that. He thought that that principle had been admitted long ago.

Mr. W. Muirhead, J.P., and Mr. H. Osborn, J.P. (Mayor of East Ham), responded.

Mr. Muirhead said it was important that local authorities, in carrying on their useful work, should not interfere with private enterprise. Sanitary inspectors practically had security of tenure. No sanitary inspector who carried out his work in a proper manner could fear anything but the greatest consideration from those who employed him, though there was a danger of small municipalities and councils interfering with inspectors in their work. He was glad that the Association would be visiting Liverpool this year.

Mr. Osborn said that, as applied to the particular branch of local government represented by the Association, the record of the work of local government for the past twenty years was exceedingly good. The ideal of the late Sir E. Chadwick was that the death rate should be reduced to almost seventeen per 1,000. This early ideal of his had already been excelled, for now we had a mortality rate as low as eleven per 1,000, and the length of life substantially increased. The agencies that had produced this result were pure water, good sewerage, healthy houses, unadulterated foods, open spaces, parks, and recreation grounds, cheap transit, and well-scavenged streets.

His Honour Judge Rentoul, K.C., LL.D., then proposed the toast of "Science and Art." John Stuart Mill said that the difference between science and art was the same difference that existed between understanding and will. Dr. Johnson defined science as certainty proved by demonstration and art as something done that was not taught by either nature or instinct. Pope said there were seven great arts, *i.e.*, grammar, rhetoric, astronomy, music, geometry, arithmetic, and logic. Many of them thought that some of those were sciences and some arts. Art came before science, for men could build and work in metal, etc., before chemistry as a science came in to teach them by demonstration what it was that they were doing. There was a science of metaphysics outside science and art, *i.e.*, mother wit, which served man better than science and art. Of all the sciences, the most important was the one the Association was concerned in, *i.e.*, sanitary science.

Sir Dyce Duckworth, M.D., F.R.C.P., in response, said there had been great changes for the better in such matters as water supply, sewage treatment, etc. The Association was therefore a scientific association, but there were great obstacles which the sanitary officer had to encounter throughout the country by the prejudice and interest which impeded the free play of scientific work. He would like to see in sanitary matters the same paternal care taken by county councils in respect to air and light and sanitary buildings and space and protection from fire. These matters were undertaken by the county councils in a satisfactory and autocratic manner, but in regard to health matters the things founded on science were not regarded with the respect that was due to them. He looked to the work of the Association to bring home to various authorities the fact that those in authority who had the power and knowledge were not content with the present state of affairs, and more power should be given to such officers in the work they did.

Mr. J. Smith Whitaker, M.D., also replied, and referred to the question of the position of the expert in modern society. English people had no great fondness for the expert, and therefore the position of the expert was perhaps harder in this country than in any other.

Sir David Gill, K.C.B., LL.D., President of the British Association, proposed "The Sanitary Inspectors' Association." The Association had an excellent *Journal*, and the members did what the British Association did, they visited various towns, and he was pleased to hear that they meant to visit Liverpool this year. The Association had an excellent President, who was doing all he could for the sanitary health of the country.

The President, in reply, said Sir David recognised that sanitary science had to deal with problems less stupendous but not less perplexing than those that engaged his attention, and that sanitary practice demanded patience, assiduity, minute and skilled observation akin to what he was accustomed to in astronomical observatories. Whether or not there were canals in Mars, there were drains in this country, and he doubted not that if the inhabitants of that ruddy planet (if there were any) could by means of superior and penetrating telescopes obtain a view of our London sewerage system they would be greatly impressed by our engineering ability. There were those who probably thought that the Association was too prosperous already, and who regarded its growth and increase as of evil omen. We had been told lately that we were suffering from over-legislation and over-inspection, and certainly the encroachments that were being made on personal liberty, the petti-fogging interference that was going on in every little detail of life, the puritanical intolerance that was abroad, the prospect of the grinding tyranny that must ensue when private enterprise was finally extinguished, were well calculated to excite apprehension. Individual freedom of action was too precious a boon to be lightly trifled with or curtailed. The man who did nothing for himself and had everything done for him ceased to be a man and becomes an automaton, and any social system founded on compulsion and propped up by inspection was rotten at the base, and must topple over in time. It was self-control, and not governmental control, that should be aimed at. But whatever the general outlook might be, he was prepared to maintain that in our sanitary department inspection was not overdone, had not yet reached its legitimate limit, and must become more thorough and stringent than it had hitherto been, for sanitary inspection, however coercive or restraining it might superficially appear, was really contributory to personal liberty, and made for a wider freedom. Its mission was not to enslave, but to emancipate. There was no tyranny so cruel and oppressive as that of disease, no abridgment of liberty as complete as the grave, no bondage so galling and pitiable as that of broken health or bodily deformity, and the measures that tended to mitigate and restrict that tyranny and imprisonment and to abolish that bondage were truly liberative and beneficent, and not hampering and vexatious. His belief was that the value of their inspectorial work was now generally recognised by the people of this country, and that wherever it was carried out with tact and discretion it was welcomed, except, of course, by the dirtily degraded and the fraudulent adulterators. It was in no way resented by the reasonable and self-respecting portions of the community, and any extension of it that might be deemed requisite in the interests of the public health would be cheerfully accepted by all sensible mortals. The old scepticism as to the benefits of sanitation was extinct. No one now doubted that modern sanitation—and modern sanitation was based on inspection—was life saving and health preserving, and a signal demonstration of its power was given in Sir Shirley Murphy's recently-published and admirable report. He showed that since the passing of the Public Health (London) Act, 1891, an Act which conferred larger powers on the metropolitan authorities than were possessed by any authorities in the provinces, there had been a reduction in the death rate of London of 30 per cent. Comparing two years at the time of the passing of that Act (1890-91) with two years after it had been fifteen years in operation (1905-06), Sir Shirley showed that in each of the last two mentioned years there had been a saving of 19,000 lives, or a gain of something like three-quarters of a million years of human existence. Surely that was a splendid record of sanitary triumph of human emancipation from the thraldom of disease. There would come a time no doubt when their occupation, like that of Othello, would be gone, when every man, woman, and child would be deeply imbued with sound sanitary principles, when every house would be a little temple of Hygeia, with an altar inscribed to the President of the Local Government Board for the time being. Then would there be no need for inspection, but that time was not yet, and he was inclined to believe that it would be co-eval with that halcyon period when the wolf shall lie down with the lamb. In the meantime the wolf, in the shape of the jerry-builder and food adulterator, was still engaged in devouring that defenceless lamb, the British public—except when they gave him pause. Infant mortality was engaging serious attention, and well it might, when we found, for example, that in Shoreditch of every 1,000 infants born 163 perished within the first year of life, while in Hampstead of every 1,000 born only seventy-seven passed away in the same period. The sanitary condition of the school buildings and offices, their construction, ventilation, lighting, heating, cleanliness, freedom from dust, were of great importance, but so was the sanitary condition of the home, in which the child spent more of its time than in the school, and a clean school would not compensate for a filthy home. It was essential, therefore, that the interest and co-operation of the parents should be enlisted in the system of medical inspection. It was the will to be clean in person, in dwelling, in food, in raiment, in habits, in conduct, in thought and spirit that could alone save us from many impending dangers, and that might ultimately enable us in some

degree to dispense with inspection. The proceedings of the Association were educational. At the periodical meetings of the eleven branches, at the annual conference, papers were read and discussions took place on everything bearing on sanitation in its scientific and practical aspects, and in the *Journal* all matters of sanitary interest were reported. But there were two outside concessions that must be granted to them if they were to attain the full measure of usefulness of which they were capable. They must be granted that security of tenure that was essential to independence, and they must be allowed to participate in the educational tests that were applied to those desirous of entering their ranks

Mr. G. Anderson, Chairman of the Central Executive Council, then proposed the toast of "Kindred Associations," coupled with the name of Mr. H. D. Searles Wood, Chairman of the Royal Sanitary Institute, who replied. Other toasts were "The President," proposed by Mr. S. Chantry, J.P., and "The Press," proposed by Mr. J. T. Quinton, Vice-Chairman of Council.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, S.W., Mr. H. P. Harris, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend Poplar Borough Council 8,088*l.* for paving works, and sanction was given to Wandsworth Borough Council to the borrowing of 3,500*l.* for street improvements.

Additions to, and Removals from, the Lists of Contractors.—The following recommendations were agreed to:—

"(*a*) That the name of C. P. Roberts, 138, St. Paul's-road, Highbury, be added to the list of contractors to be invited to tender for small new schools, enlargements, structural alterations, repairs, cleaning, and painting.

(*b*) That the names of the following firms be added to the list of contractors to be invited to tender for structural alterations, repairs to buildings, cleaning, and painting, subject to the conditions severally specified:— (i.) Brand, Pettit, & Co., 247, West-green-road, Tottenham, for works not exceeding 4,000*l.* in value; (ii.) G. Butters, 19, Shore-road, South Hackney, for works not exceeding 500*l.* in value; (iii.) E. Jackson, Rectory Works, White Horse-lane, Stepney, for works not exceeding 1,000*l.* in value, for one year on probation; (iv.) A. F. Vigor & Co., 10, Grosvenor-road, for works not exceeding 5,000*l.* in value, for one year on probation.

(*c*) That the names of the following firms be added to the list of contractors to be invited to tender for heating apparatus, subject to the conditions severally specified:—(i.) J. Stott & Co., 158, Queen Victoria-street, for works exceeding 300*l.* in value; (ii.) Moorwood, Sons, & Co., Ltd., 30, Gray's-inn-road, for works exceeding 300*l.* in value.

(*d*) That the limit up to which Messrs. Cannon & Hefford, Peckham, are allowed to tender for heating apparatus be increased from 500*l.* to 1,000*l.*

(*e*) That the name of J. MacIntosh, 25, Langham-street, be added to the list of contractors to be invited to tender for cleaning and painting.

(*f*) That the name of Hammond & Champness, Kent Engineering Works, Alfreton-street, Deptford, be added to the list of contractors to be invited to tender for small contracts for iron staircases.

(*i*) That the names of the following firms be removed from the list of contractors so far as relates to work in connexion with Council schools:—(*i.*) Korting Brothers, 53, Victoria-street, Westminster (heating apparatus); (ii.) C. Leather & Sons, 98, High-street, Putney (brick structures, repairs, and iron buildings, etc.); (iii.) J. Jeffreys & Co., 11, Old Queen-street, Westminster (heating apparatus).

(*j*) That the name of J. A. Stayner, 208, Bermondsey-street, be retained on probation for a further period of one year on the list of contractors to be invited to tender for repairs to school buildings."

Indication of Houses of Historical Interest.—The Local Government, Records, and Museums Committee reported as follows:—"On October 24, 1904, and March 13, 1906, we informed the Council that, acting upon our suggestion, the Duke of Bedford had affixed memorial tablets at his own expense to certain houses on his London estate. We have since been informed that his Grace has also affixed tablets to the undermentioned houses:—No. 45, Bloomsbury-square—Philip, second Earl of Chesterfield; Philip, third Earl; and Philip Dormer, fourth Earl of Chesterfield, K.G. No. 106, Great Russell-street—Augustus Charles Pugin and Augustus Welby N. Pugin. Twelve tablets have now been affixed to houses on the Bedford Estate."

Crosby Hall.—The Local Government, Records, and Museums Committee presented a long report, in which they stated that the endeavours made to preserve Crosby Hall had not met with success, and they recommended that the reference to the Committee be discharged.

Sir J. Benn said the Council had done their little best—not much, perhaps—but that little had been unsuccessful. He moved to add to the recommendation the words—"That the Council expresses its regret that the City companies have not taken measures to save from destruction such an historic monument as Crosby Hall."

Mr. Dawes seconded the addendum.

Mr. Stuart Sankey replied that Crosby Hall had constantly been modernised, and a portion of it was affected with dry rot. If the Council had decided to spend any large sum out of the rates in preserving the hall there would have been an outcry, and the Council would have been told that they were taking the bread out of the mouths of the starving children. He considered that the livery companies of the City had contributed liberally to the preservation fund.

Sir Melvill Beachcroft said the City companies could do more good with their money in the direction of education than in preserving ancient buildings.

Lieut.-Colonel Clifton Probyn believed there was still a chance of bringing forward a scheme for removing Crosby Hall to some other site, as had been done in the case of the Cluny Museum in Paris.

Mr. E. Gray, the Chairman of the Committee, said every effort had been exhausted to save the hall, and he failed to see why the City companies had been made the scapegoat. If the mover of the amendment had substituted the word "Government" for "City companies" he would have been prepared to support it.

On a division, the amendment was rejected by seventy-two votes to thirty-eight, and the recommendation of the Committee was adopted.

Port of London.—Mr. McKinnon Wood asked the Chairman of the Rivers Committee if his attention had been called to an answer made by the President of the Board of Trade to the effect that he had received no definite response to his request as to the attitude of the Council in regard to the proposed legislation affecting the Port of London.

Sir Melvill Beachcroft replied that a communication had been received from Mr. Lloyd-George on the subject, asking for an answer to the questions whether the Council would be prepared to make a subvention towards the expenses of dredging and improving the channel of the river, and whether the Council would guarantee the interest on the stock to be issued by the new authority. That letter was received only three days before the recess; it was now before the Committee, and he hoped in a very short time to bring up a report, which would have the object of ascertaining the opinion of the Council on the subject.

Theatres, etc.—The following proposals were agreed to:—Proposed heating and electric lighting installations at the Chelsea Temperance Hall, Pond-place, Chelsea (Messrs. Stapleton & Sons). Arrangements of the Bostock arena and jungle in the Empress Theatre, London Exhibitions Buildings, Earl's Court, in connexion with the forthcoming Hungarian Exhibition (Mr. A. O. Collard). Arrangements proposed to be made in the ground floor and galleries of the main hall in connexion with the "Orient in London" Exhibition to be held at the Royal Agricultural Hall, Islington, from June 11 to July 11, 1908 (Messrs. Spalding & Spalding). The Council's requirements in respect of the heating-chamber at St. Mary's Hall, York-rise, Dartmouth Park (Mr. G. Ball).

Design for New County Hall.—The Establishment Committee reported as follows:—

"Mr. Norman Shaw, R.A., Sir Aston Webb, R.A., and Mr. W. E. Riley, F.R.I.B.A., the three assessors appointed to act in the final stage of the competition for designs for the new County Hall, have submitted to us their report on the result of the competition. It will be remembered that Mr. Shaw and Mr. Riley were nominated by the Council, and Sir Aston Webb was elected as the result of the voting among the twenty-three competitors in the final stage. The competing architects in the final stage of the competition consisted of the fifteen authors of designs selected by the two assessors (Mr. Shaw and Mr. Riley) in the preliminary stage, together with eight architects selected by the Council.

The names of the fifteen authors of designs selected by the assessors in the preliminary stage were—Mr. R. F. Atkinson, F.R.I.B.A., Mr. H. J. Blanc, F.R.I.B.A., R.S.A., F.S.A., Mr. G. Washington Browne, Mr. T. Davison, A.R.I.B.A., Mr. M. J. Dawson, A.R.I.B.A., Mr. J. B. Fulton, A.R.I.B.A., Messrs. Gardner & Hill, Mr. W. Haywood; Messrs. Houston & Horne (A.R.I.B.A.), Messrs. Jemmet & McCombie, Mr. R. Knott, Messrs. A. Marshall Mackenzie (F.R.I.B.A., A.R.S.A.) & Son (A.R.I.B.A.), Messrs. Russell & Cooper, FF.R.I.B.A., Messrs. Warwick & Hall, AA.R.I.B.A., Messrs. Clyde Young & E. W. Poley, AA.R.I.B.A.

The names of the eight architects selected by the Council were—Mr. J. Belcher, A.R.A., P.R.I.B.A., Mr. W. Flockhart, F.R.I.B.A., Mr. Ernest George, F.R.I.B.A., Mr. H. T. Hare, F.R.I.B.A., Mr. T. G. Jackson, R.A., Mr. E. L. Lutyens, F.R.I.B.A., Mr. E. W. Mountford, F.R.I.B.A., Messrs. Nicholson & Corlette (Sir Charles Nicholson, Bt., M.A., F.R.I.B.A., and Mr. H. C. Corlette, F.R.I.B.A.).

The assessors in their report state that the twenty-three designs were illustrated by 346 drawings, and they congratulate the Council on having secured what they apprehended to be the object of the competition, viz., a fine design for the new County Hall. The assessors have unanimously selected design No. 106, which was submitted by Mr. Ralph Knott, and they state that the forcible and artistic suggestion and brilliant qualities of the design commanded their warm admiration. In communicating the result to the Press we have thanked all the competitors for the response made to the Council's invitation, and for the great amount of work and thought which has been expended in maturing the designs submitted. We have also expressed to the assessors our appreciation of the manner in which they have carried out their delicate and difficult task.

Members of the Council and also representatives of the Press have been notified as to the days the designs will be exhibited at the Medical Hall, Victoria-embankment, W.C., and the public will be admitted to view the same during the week commencing February 7, between the hours of 10 a.m. and 8 p.m."

They also submitted the following report of the assessors:—

"Gentlemen,—We beg to report that in accordance with your instructions we have most carefully and anxiously examined the twenty-three sets of designs sent in for the final competition for this very important building.

We are pleased to report that the designs show much skill and a great expenditure of time and thought, and we find that the honorarium of 200 guineas is due to each competitor under instruction 5.

The twenty-three designs submitted are illustrated by 346 drawings, and we began our important duties of examination and comparison on January 8. We are glad to be able to congratulate the Council on having obtained what we apprehend to be the object of this competition, viz., a fine design for the new County Hall.

As is usual in a competition for a building of this magnitude, all the designs (which, after all, can be, at this stage, little more than preliminary or sketch designs) show certain discrepancies and irregularities, sometimes in plan, sometimes in elevation, often in both; and any of the designs would, as is to be expected, need modification before being executed.

Under these circumstances, we have selected the design which, in our opinion, shows the greatest promise of a worthy result, and best deals with the problem set.

We find, unanimously, that design No. 106 is, on the whole, the best, and we therefore recommend it for acceptance and execution.

It is a forcible and artistic suggestion which conveys to us the purpose for which it is to be erected, and is almost entirely without costly and unnecessary features; moreover, we are of opinion that the estimated cost is a fair one, and that the building could probably be erected within the sum named in instruction No. 34.

While making this award we wish to record our opinion that the great projection of the centre portion of the river front requires modification, and that the fine flight of steps into the river beyond the face of the embankment wall, described as "undesirable" in the replies to competitors' questions, should be omitted, as, indeed, the author in his report himself suggests. There are other points in the plan that require modification, but the brilliant qualities of the design far outweigh, in our opinion, these and other comparatively unimportant defects.

We have the honour to be, Gentlemen,

Your obedient servants,

R. NORMAN SHAW, R.A.
ASTON WEBB, R.A.
W. E. RILEY."

Mr. McKinnon Wood asked if a model could be prepared of the successful design in order that it might be better understood; and also if something could be done to show the various designs to better effect.

Sir Melvill Beachcroft said they had a general estimate of the cost of the design, but the Council were not in a position to come to a definite conclusion in the matter, and it would

be convenient to know when they could have an estimate of what the cost of carrying out the selected design would be. In the event of the Council deciding not to carry out the design, what were they committed to pay the successful architect? Was it the sum of 8,000*l.*? Some of the members of the Council had a feeling that the Council were drifting in the matter. The competition was instigated by the late Council in February last year, but the time must soon come when they must decide definitely one way or another, and as to whether or no they were to spend a large sum of money on a County Hall. There were those who, like himself, were disinclined to vote this large expenditure, and they asked for full information, and as to how far they were to go on with the matter. They would all be glad that the competition had brought to the front a young architect with such qualities.

Mr. Smith asked whether it was not a fact that the present Establishment Committee had fully considered the matter, and had decided to proceed with the scheme.

Captain Swinton asked whether it was not a fact that it was decided that in selecting a design they were not committed necessarily to carrying it out, but rather to a modification of it, if necessary, or of any other design, as circumstances made necessary.

Colonel Welby asked whether the conditions given to the competing architects were the same as those given to the assessors. He did not think the accepted design would be as great an ornament to London as some of the others would be.

Mr. R. A. Robinson, Chairman of the Establishments Committee, said, in answer to Mr. McKinnon Wood, that more space could be obtained by rearranging the designs, and he had arranged that the selected design should be made more accessible to the public. As to a model, he would bring the matter before the Committee. There seemed to be a difference of opinion as to obtaining a model, but he thought that, if members desired it, it would be a good thing to obtain a model of such an important work. As to the general question, all that had been done so far was to select an architect who was to be regarded as the selected architect for a County Hall; but they had not selected the design itself, although the design selected would play an important part in the building of the hall. He had just seen Mr. Knott, and he congratulated him in the name of the Council on his success. As to what money payment would be made to the successful architect if he was not asked to go on with the scheme, he did not know. He could not imagine that the Council would now say that no design was to be carried out. The Council must have a full report on the whole question, and the matter would be taken into consideration. As to the criticisms of the design, the assessors referred to it as a forcible and artistic suggestion which conveyed the purpose for which it is to be erected, and that the estimated cost was a fair one. If the successful architect could do that, he could design a building of the kind they wanted. While they must have a good and suitable building, they did not want to spend money on it unnecessarily. In reply to Colonel Welby, the conditions in all essentials were the same. The Committee would now proceed with the greatest deliberation, and they would call to their aid their own architect, and they would decide what accommodation and requirements they really wanted and whether the cost could be spread in such a way that it would not fall on the ratepayers in any one year.

Mr. Howell J. Williams said he hoped the Council would not humbug the design about and bring the new County Hall down to the level of a mere block of workshops. The feeling of London was that a building should be erected which should be a credit to the municipality, and if they could not afford a worthy home they had better postpone the matter altogether. It was a matter for congratulation that an architect of such ability had been selected in such circumstances—far better than if an architect had been selected from eight selected architects. He would suggest that the Committee should have a perspective made of the design.

The Rev. Mr. Hastings said he did not join in the chorus of praise of the successful design. It would be a useful building, and probably the internal arrangements were good, but that was mere utilitarianism. How far would this flat, level design appeal to the eye of those who came after us? When he thought of such a town hall as that at Brussels, he asked himself whether the Council of the greatest city in the world, and with such a fine site, would put up such a building—a building showing in the front some 200 windows all the same, the same sort of chimneys all at the same level. People would not come to see such a building when erected. The design was not original enough. It was the best plan and it had considerable dignity and restraint, but it was neither original enough nor picturesque enough. It would be another specimen of a cold, grim, and soulless style. He could not see the use of that great flight of steps. The building was too dumpy and barrack-like in appearance. If put up, he hoped it would be coloured or in some way made more attractive and less monotonous.

Mr. Wild said that the last speaker had made an important admission, *i.e.*, that the design showed the best plan. He was glad, however, that the whole matter was to be considered *de novo*.

Mr. Robinson said he thought there would be no difficulty about the perspective drawing. As to Mr. Hastings's remarks, the three assessors thought the scheme had considerable architectural merit.

Finishing of Carriageways and Footways, Norbury Estate.—It was agreed that expenditure on capital account not exceeding 1,500*l.* in respect of completing the surfaces of the carriageways and footways of the portion of Northborough-road between London-road and Bulkeley-road, and the portions of Palmer's-road and Bavant-road between Northborough-road and Newlands-road, on the Norbury estate, be sanctioned.

Cinematograph Exhibitions.—Mr. Reynolds moved that, in view of the highly dangerous character of unlicensed cinematograph exhibitions, the Home Secretary be asked to receive a deputation from the Council to urge the necessity for immediate legislation to make it illegal for cinematograph exhibitions to be given in premises which have not been licensed for the purpose, and that the Theatres and Music Halls Committee do make the necessary arrangements for the deputation.

Sir J. Benn seconded the motion, which was agreed to without discussion.

Southwark Bridge.—Mr. Gilbert, in accordance with notice, moved that, as the City Corporation are considering the rebuilding of Southwark Bridge, it be referred to the Highways Committee to negotiate with the Corporation, and report on what terms London County Council tramways will be allowed to cross the reconstructed bridge to a terminus on the City side.

Mr. Whitaker Thompson said the Highways Committee had been negotiating with the City Corporation for some months on this subject, and those negotiations were still being continued.

Mr. Gilbert said, in these circumstances, he would withdraw his motion.

The Council, having transacted other business, adjourned.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses:—

Lines of Frontage and Projections.

Norwood.—Erection of brick, stone, and tile porches to six houses on the northern side of Canterbury-grove, Norwood (Mr. J. Wilson).—Consent.

Norwood.—King's College Hospital, with projections, on the south-western side of Denmark-hill, Norwood, to abut also upon the southern side of Bessemer-road (Mr. W. A. Pite for the Building Committee of King's College Hospital).—Consent.

Paddington, South.—An oriel window and cellar in front of No. 24, Blomfield-road, Paddington (Mr. G. Remington for Mrs. J. Neave).—Consent.

St. George, Hanover-square.—Retention of two oak and glass wind-screens at the sides of the porch in front of No. 76, Eaton-square, St. George, Hanover-square (Mr. L. U. Grace for Mr. O. Philipps, M.P.).—Consent.

Wandsworth.—Retention of a projecting sign at a motor garage adjoining No. 109, Streatham-hill, Wandsworth (Messrs. Treacher & Son for Mr. P. Hitchman).—Consent.

Wandsworth.—Buildings on the south-eastern side of Norwood-road, Herne Hill (Messrs. May & Perrin for Mr. A. J. Perrin).—Consent.

Westminster.—That the application of Mr. J. S. Gibson for an extension of the periods within which the erection of a block of office buildings on the northern side of Tothill-street, Westminster eastward of the Imperial Theatre, was required to be completed, be granted.—Consent.

Battersea.—Buildings on the northern side of Lavender-hill, Battersea, eastward of the entrance to the London and North-Western Railway Company's goods depôt (Messrs. A. W. Taylor & Co.)—Refused.

Width of Way.

Westminster.—Buildings on the eastern side of Palmer-street, Westminster, southward of No. 7, at less than the prescribed distance from the centre of the roadway of the street (Messrs. Barlow & Roberts).—Consent.

Width of Way and Frontage.

St. George, Hanover-square.—A projecting iron and glass shelter to the Hotel Curzon, Nos. 23 and 24, Bolton-street, Piccadilly (Messrs. Cubitt, Nichols, Sons, & Chuter for Mr. S. Harwath).—Consent.

Lines of Frontage and Space at Rear.

Hackney, North.—Thirty-six houses on the northern side of Egerton-road, Stamford Hill (Mr. P. Roche).—Consent.

Islington, East.†—Additions at the flank and rear of No. 95, Hornsey-road, Islington, to abut upon Shelburne-road (Messrs. Thorpe, Furniss, & Elkington for Mrs. E. L. Spring).—Consent.

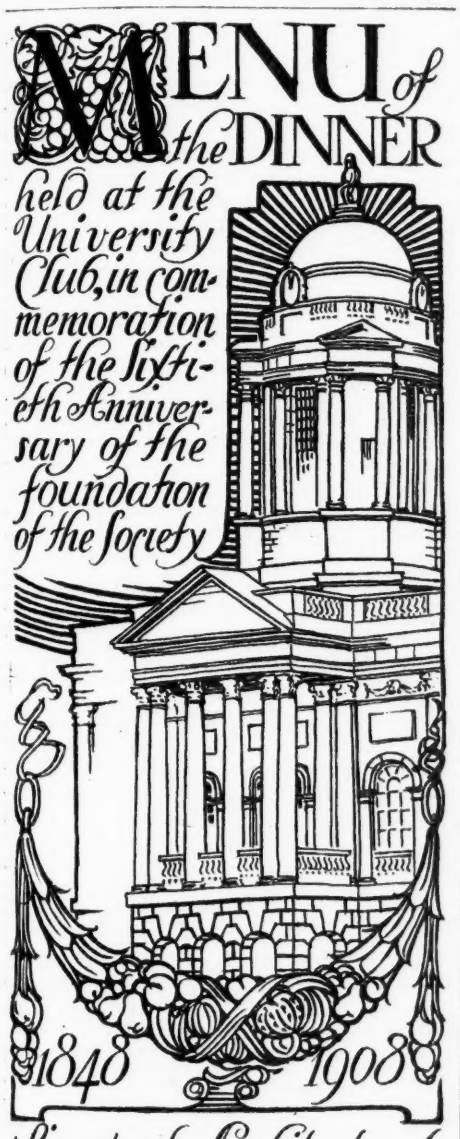
Paddington, South.—That the Council do make no order with regard to the application of Mr. A. Sykes for permission to omit a portion of the party-wall above the roof of Nos. 19 to 23, Porchester-road, Bayswater, adjoining the rear of Nos. 11, 13, and 15, Porchester-road.—Agreed.

The recommendation marked † is contrary to the views of the local authorities concerned.

Architectural Societies.

LIVERPOOL ARCHITECTURAL SOCIETY.—To commemorate the sixtieth anniversary of the foundation of the Liverpool Architectural Society—which is the oldest society connected with the architectural profession outside of London—the members assembled at dinner at the University Club, on Saturday last week, under the presidency of Mr. Edmund Kirby. The company included Mr. John M. Hay, whose connexion with the Society dates back to its establishment; Mr Ernest George, the president-elect of the Royal Institute of British Architects; Mr. Edgar Browne, Mr. Paul Ogden (President of the Manchester Society), Professor Reilly (Liverpool University), Messrs. W. E. Willink, Henry Hartley, Thomas Shelmerdine (City Building Surveyor), A. Culshaw, F. Atkinson (London), T. E. Eccles, F.R.I.B.A., Arnold Thornely, F.R.I.B.A., W. G. Dobie, F.R.I.B.A., Hastwell Grayson, F.R.I.B.A., T. T. Rees, F.R.I.B.A., P. C. Thicknesse, F.R.I.B.A., John Woolfall, Frank Simon, Huon Matear, F.R.I.B.A., F. Pierce Edwards, A.R.I.B.A., A. Gilbert Fraser, A.R.I.B.A., hon. secretary.—The loyal toast was honoured, and the toast of "The Royal Institute of British Architects" was proposed by the President and responded to by Mr. Ernest George. The principal toast was proposed by Mr. Edgar Browne. Considering that they were speaking of a Liverpool Society, he said, sixty years was a long life. The fact that the society had survived for so many years was a proof of its exceptional vitality. A society like that needed neither praise nor reprimand. He looked upon it as partly a trade union and partly a guild. The guilds which flourished in the middle ages had practically died out except in name, but they were especially needful in all matters connected with the arts. There was not the slightest doubt that a number of men united by a common idea, and benefiting mutually by the interchange of ideas, accomplished far more than men who were scattered and worked separately. Personally, he would like to see an even greater degree of corporate action and more uniformity of aim on the part of the architects. The architects had not nearly enough power in the city. Architects, like the members of his own profession, worked under a great disadvantage—that they had not an educated or a sympathetic audience to appeal to. The architect was not appreciated; and yet it was a fact that an architect was only able to become really great and valuable by appealing to an audience which knew the value of his work.—The President, in responding, recalled the fact that it was Hablot K. Browne, the father of Mr. Edgar Browne, who, as the illustrator of many of Dickens' works, had limned the figure of the immortal Pecksniff. Pecksniff was an architect, and when the Liverpool Architectural Society was formed

in 1848, no doubt one of the prime intentions of its founders was to squash the Pecksniff class of architect. That purpose, beyond question, had been fulfilled. The leading architects of the period were Mr. Culshaw and Mr. Weightman, whose son they had present with them that evening; but an even closer link with the early days was their old friend Mr. John M. Hay, who had attended the first meeting of the society, had been a member since its second year, had three times filled the presidential chair, and was still an honoured and beloved member of their society. Amongst other men who had added distinction to the profession in Liverpool the president mentioned Sir James Picton, a pioneer in commercial buildings;


MENU of the DINNER
held at the University Club, in commemoration of the Sixtieth Anniversary of the foundation of the Society
1848 1908
Liverpool Architectural Society: February 1st 1908.

Design for Menu Card for the Commemoration Dinner of the Liverpool Architectural Society. By Mr. Philip Dawson.

Mr. George Grayson, and Mr. Cunningham, the architect of the Philharmonic Hall. One of their past hon. secretaries was Mr. H. H. Statham, the present editor of the *Builder*. The society was now usefully allied with the students at the University, and the distinguished successes which these students had recently gained gave them reason to ask whether it was not time that the Royal Institute came to Liverpool. If members of their society could produce, on the one hand, a palace at the riverside, of which Venice and Florence might not be ashamed, and, on the other hand, such a charming design as appeared on the menu card* of their Diamond Jubilee dinner, there was no saying where they were going to stop.—

* There was a special competition for the menu card, and the successful design, by Mr. Dawson is given above. We can congratulate the author upon a very good design.

Mr. Hay, who was given an enthusiastic reception, also responded. He was, he said, the only survivor of the founders of the Society, and having witnessed its activities from its birth to the present day, he could testify what a boon it had been. It had made the business into a brotherhood. [The conclusion of Mr. Hay's speech was the signal for a rousing display of enthusiasm, the company rising to their feet and joining lustily in "He's a jolly good fellow."] The toast of "Kindred Societies" was proposed by Mr. Henry Hartley; and Mr. Paul Ogden, in response, said that some of the architectural features of Liverpool were surpassed by nothing of recent times to be seen in London. St. George's Hall was the finest modern building in Europe.—Mr. S. Castle, on behalf of the Law Society, joined in the congratulations with the Architectural Society on the attainment of its sixtieth anniversary.

[The Society appears to have owed its origin to a suggestion of the late Mr. William Jackson, M.P., of the Manor House, Birkenhead. It dates its existence from a meeting of architects held in the beginning of the year 1848 at the Lyceum, Bold-street. The objects of the founders were to promote the cultivation of architectural taste, to secure the benefits to be derived from concerted action by members of the profession to encourage improvements in methods of construction and in sanitary science, and generally to improve the facilities for the education of architectural students. The Society was called the Liverpool Architectural and Archæological Society, a name which somewhat misrepresented the main object of the Society, for it was intended that the subject of archæology should be accessory, and refer only to the study of ancient buildings. Mr. T. B. Horsfall, then Mayor of Liverpool, was the first president. The membership was not confined merely to architects, but included all those who took an interest in architecture, including several members of the nobility. After a time the public interest, which had been such a marked feature of the Society during the first decade of its existence, began to wane, and the membership to be drawn from those more immediately interested in the technical character of its proceedings. In 1876 the name "Archæological" was struck out, and the Society began to slowly transform itself into one of an exclusively professional character. In 1889, under the terms of a revised charter, the Society entered its alliance with the Royal Institute of British Architects, and now conducts the local examinations for that body. In 1893, owing to the inadequate opportunities for obtaining an efficient architectural training, the Society started a movement for the establishment of a school of architecture at the University College. The movement was brought to a successful issue in 1894, when Professor F. M. Simpson was appointed to the Roscoe Chair of Fine Arts. The school is now presided over by Professor C. H. Reilly, M.A., A.R.I.B.A., and for the first time in England it has become possible to obtain a University degree in architecture (B.Arch.), the course at the University of Liverpool extending over a period of five years. Ten years ago the Society celebrated its jubilee with a dinner, at which the late Mr. T. D. Barry, one of the founders, was present. The transformation commenced in 1876 was completed in 1901, when the Society became incorporated under the Company Acts as a limited company, the membership of which consists exclusively of architects, whose qualifications are defined by the articles of association. The President (Mr. Edmund Kirby) is in the chair for the third year, having served in 1887 and again last year, while he was re-elected recently. Appended is a complete list of past presidents for the whole sixty years:—

Liverpool Architectural and Archæological Society.

1848-49. T. B. Horsfall (Mayor of Liverpool).
1850-52. J. A. Picton, F.S.A.
1849-50. The Rev. David James, F.S.A.
1852-54. Charles Verelst.
1854-56. John Hay.
1856-58. Samuel Huggins.
1858-60. H. P. Horner.
1860-62. James M. Hay.
1862-64. W. H. Weightman.
1864-66. Joseph Boult.
1866 William Stubbs.
1866-68. T. J. Kilpin.
1868-70. Francis Horner.
1870-72. Henry Hill Vale, F.R.I.B.A.
1872-74. T. D. Barry.
1874-76. Joseph Boult, F.R.I.B.A.

Liverpool Architectural Society.

1876-77. J. A. Picton, F.S.A.
1877-78. James M. Hay.
1878-80. Henry Summers, F.R.I.B.A.
1880-82. Charles Aldridge, F.R.I.B.A.
1882-84. William Parslow, F.R.I.B.A.
1884-85. Thomas Cook.
1885-86. Thomas Mercer.
1886-87. George E. Grayson, F.R.I.B.A.
1887-89. Edmund Kirby, F.R.I.B.A.
1889-91. T. Mellard Reade, F.R.I.B.A., F.G.S., A.M.I.C.E.
1891-93. T. Harnett Harrisson, F.R.I.B.A., A.M.I.C.E.
1893-95. Henry Hartley, F.R.I.B.A.
1895-96. Alfred Culshaw, F.R.I.B.A.
1896-97. George Bradbury.
1897-99. W. E. Willink, M.A., F.R.I.B.A.
1899-00. E. A. Ould, F.R.I.B.A.
1900-01. Professor F. M. Simpson.

Liverpool Architectural Society (Incorporated).

1901-02. Professor F. M. Simpson, F.R.I.B.A.
1902-04. John Woolfall, F.R.I.B.A.
1904-06. P. C. Thicknesse, F.R.I.B.A.
1906-07. Edmund Kirby, F.R.I.B.A., F.S.I.]

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—A meeting of this Society was held on Thursday, January 30, Mr. P. Robinson presiding. Mr. H. Rutherford read a paper on "A Tour in Spain and Italy," with special reference to study of colour. He said "The paper I have with me to-night is a short description of my Owen Jones tour in Spain, Sicily and Italy. I have also some drawings and slides which I made from the photographs I took in the various places visited. The slides are taken from an amateur photographer's point of view, and may serve to illustrate some of the customs and perhaps to throw side-lights on the lives of the people of whose architecture we are to see some examples. Accompanied by an architectural friend, we left London for Gibraltar, it being our intention to approach Spain from the south. After a few days in Gibraltar we crossed to Tangier. I found the town exceedingly interesting with its white-washed and flat-roofed houses and its narrow, dirty, and uneven streets. From Tangier we returned to Gibraltar and made our way to Ronda, which is picturesquely situated in the midst of a magnificent amphitheatre of mountains, and then on to Seville. At Seville one of the chief attractions to a student of colour is the number of fine examples of coloured tile, brick and majolica work. From Seville we went to Cordova, once the ancient capital of the Moors, and then to Granada. From Granada we returned to Gibraltar and sailed to Palermo, our main object being to study the mosaics in the Capella Palatina. The interior is a perfect gem of mediæval art, the walls being entirely covered with glass mosaics on a golden ground. Our next stopping-place was Pompeii. In the wall decoration of Pompeii marble is very rarely met with in the domestic architecture, and not often even in public buildings, the columns being invariably constructed of brick covered over with stucco, to which colour was applied, and the scheme of colour decoration consisting mainly of reds, greens, yellow and black. From Pompeii we journeyed to Rome, Vienna, Florence, Venice, terminating our tour at Verona."

HOSPITAL EXTENSION, BATLEY.—The new wing of the Batley and District Hospital at Carlinghow Hill was formally opened on the 25th ult. By this extension two new wards have been provided, one for male and one for female patients, and the administrative portions of the building have also been enlarged and improved. The character of the work is in harmony with the older part of the building. Delph stone being used for the external walls, and Westmorland slates for the roofing. The cost is estimated at 3,800*l*., and the work has been carried out from the plans of Mr. Arthur Hanstock.

Engineering Societies.

SOCIETY OF ENGINEERS.—The first ordinary meeting of the Society for the present year was held on Monday, the 3rd inst., at the Royal United Service Institution. Mr. Maurice Wilson, the President for 1906, first occupied the chair, and presented the premiums awarded for papers read during the year, viz.: The President's Gold Medal to Mr. R. W. A. Brewer for his paper on "Liquid Fuels for Internal Combustion Engines"; the Bessemer Premium of Books to Mr. E. J. Stead for his paper on "The Connaught Bridge, Natal"; a Society's Premium of Books to Mr. C. A. St. George Moore for his paper on "Working Experiences with Large Gas Engines"; and a Society's Premium of Books to Mr. H. Blake Thomas for his paper on "Subaqueous Operations." The thanks of the Society were accorded to Messrs. B. H. Thwaite and R. E. Thorpe for their paper on "The Renard and Sourcouf Road-Train System"; to Mr. E. R. Matthews for his paper on "Waterworks Construction in America"; and to Mr. H. C. Huggins for his paper on "Bridle Roads in the West Indies." Mr. Maurice Wilson then introduced the President for the present year, Mr. Joseph William Wilson, who proceeded to deliver his inaugural address, in the course of which he referred to engineering progress during the period since his last presidency, pointing out that this covered the introduction of tube railways, which had done something to relieve the traffic of London, though much more remained to be done, and he reiterated the necessity for some competent authority to direct the present unsystematic growth of our great metropolis. The President also gave particulars of the Grand Trunk Pacific Railway, now being pushed forward across Canada from the Atlantic to the Pacific, so as to provide an "All Canadian Route," which would shorten the Pacific voyage to the East by two days, and thus provide the shortest route between Europe and Asia; and allusion was made to the hardships and dangers undergone by the engineers who were locating this great railway in the far North-West. Reference was also made to the recent abandonment of the Channel Tunnel Scheme, and the revival of the proposal for a Channel Ferry, now sanctioned by Parliament—train ferries on a large scale being in successful operation in many parts of the world, though they were considered somewhat of a novelty in this country. No doubt could be entertained as to the advantage of avoiding break of journey for passengers, and especially for goods. The President then touched upon the problem of the training of an engineer, showing that, although we were careful to apply "common sense to the raw material" in our engineering manufactures, we often failed to do so in the production of the engineer himself. He emphasised the comparative failure of our leading schools in this respect, and urged that they should devote their great opportunities to a more practical end, so that the grievous waste of time, now so common when a youth embarked upon his profession, might be as far as possible removed.

THE SANITARY INSPECTORS' EXAMINATION BOARD.—The following is a list of the candidates who passed in the examination for sanitary inspectors under the Public Health (London) Act, 1891, held in London in January, 1908, with the names of the institutions at which the candidates received instruction:—*Royal Sanitary Institute*—Miss Albinia Brodrick, Miss Margery Cossens, Mr. Alfred Coudroy, Miss Alice Perry, Mr. H. A. Pearce, Mr. Harold G. Sharp, Miss Amy Sharp, Mr. Sydney V. Trimming; *National Health Society*—Miss Janet Baron, Miss Mary F. Cremen, Miss Margaret Patteson, Miss Marie H. McColl, Miss Hester Parkes, Miss Margaret M. Urquhart, Mrs. Katherine Ross; *King's College*—Mr. Leonard Fuller, Mr. Alfred Barr; *Hackney Institute*—Miss Dora Barron; *in office as sanitary inspector*—Miss Helen C. Hodgson, Miss Mary Sutton, Mr. James W. Wood.

COURT OF COMMON COUNCIL.

A MEETING of the Court of Common Council was held at the Guildhall on Thursday last week, the Lord Mayor presiding.

Hornchurch Wharf.—The Streets Committee submitted accounts of W. Cory & Son, Ltd., amounting to 442*l.* 19s. 6d., being balance due in respect of work on the embankment and other incidental works to the wharf at Hornchurch.

Underground Conveniences.—On the recommendation of the same Committee, it was agreed that additional accommodation should be provided at the underground conveniences for women in Bishopsgate-street and Aldgate, at a total estimated cost of 120*l.*

Widening of Fleet-street.—The Improvements and Finance Committee recommended, and it was agreed, that notices be served to acquire the freehold interest in the ground needed to widen the public way in front of No. 47, Fleet-street.

Royal Sanitary Institute Congress.—The Sanitary Committee recommended that the Chairman (Mr. Frederick Link, J.P.), the late Chairman (Mr. S. Pollitzer), and the Medical Officer of Health (Dr. William Collingridge) be appointed delegates to represent the Corporation at this Congress. The Court agreed.

Proposed National Health Authority.—The Port of London Sanitary Committee, reporting on a letter from the Corporation of Newcastle-upon-Tyne relative to a conference of representatives of sanitary authorities to be held in London in November next for the purpose of considering the question of the establishment of a permanent Union of the sanitary authorities of the United Kingdom into a Supreme National Health Authority, and asking the Corporation whether it approved of the establishment of such an authority, and, if so, to appoint three members to attend such conference, recommended that the Corporation, as the Port of London sanitary authority, should continue to give its support to the Association of Port Sanitary Authorities, and should not join the new National Union of Public Health Authorities.

The Foreign Cattle Market.—On the recommendation of the Cattle Markets Committee, the offer of Messrs. T. Matthew Shaw & Co., Ltd., to carry out works of renewal and reparation to overhead rails and switches at the Foreign Cattle Market, Deptford, at the sum of 658*l.*, was accepted.

Crosby Hall.—Mr. John Stopher presented the report of the Special (Crosby Hall Preservation) Committee, which stated that there was no prospect of the building being saved, and recommended that the reference be discharged. Mr. John H. Lile moved that the City Lands and Library Committee should be instructed to consider and report upon any suggestion that might be made by the bank for the transfer of objects of historical interest to the Corporation. Mr. R. Stapley, in seconding the motion, expressed the hope that the directors would be willing to hand over the oriel window so that it might be placed in the Guildhall. The Lord Mayor stated that the directors were spending a great deal of money on the marking and storing of portions of the old building. After some further discussion the motion was adopted.

Fifty Years Ago.

FROM THE *Builder* OF FEBRUARY 6, 1858.

EAST-INDIAN RAILWAYS: CONSTRUCTION OF BRIDGES AND VIADUCTS.—A test, in reference to the strength of iron railway bridges for Indian railways, took place lately, at the works of Messrs. Westwood Baillie, Campbell, & Co., Isle of Dogs. Colonel Kennedy, the chief engineer of the Bombay and Baroda Railway Company, has in a series of papers pointed out the importance of completing a system under which all the bridges and viaducts should be carried out on a principle which will admit of the adaptation of the portions of any one of these structures to the repair or reformation of any other or all of them. Colonel Kennedy's system is that the bridges and spans of all his similar works shall be identical in their parts—a system which, if it had been applied to the construction of such works in his country and to the building of our locomotives, would have effected a saving of some hundreds of thousands per annum in the repairs of our permanent ways and rolling stock.

*** Thus it will be seen that the idea of standardising the parts of steel structures and of machinery, which has recently been taken up with much energy in the United States, and subsequently in this country, is fifty years old, and received our cordial appreciation at that date.—ED.

Illustrations.

RENAISSANCE AND MODERN CHURCHES OF PARIS.

II.—VAL DE GRÂCE.

THE French Queen, Anne of Austria, in disappointment at having no children after twenty years of marriage, made a vow to erect a church if she were granted a son. In 1638 that son—afterwards Louis XIV.—was born, and the Queen commissioned François Mansart to carry out the realisation of her vow in building this church on the site of an ancient fief of the Valois, the "Hotel du Petit Bourbon," where she had already established a convent of nuns from the monastery of Val de Grâce situated in the environs of Paris. But the difficulties which Mansart encountered in commencing the work, including the costly nature of the foundations, for which he was blamed (though it was really unavoidable in consequence of the presence of ancient quarries on the site), led him to withdraw from it. Jacques Le Mercier, who replaced him, followed out his plan except that he enlarged the chapel of the *chevet*. Le Mercier died in 1654, after a long interruption of the work, caused by the troubles connected with the Fronde. Pierre Le Muet and Gabriel Le Duc were then appointed joint architects, the latter surviving his collaborator and completing the building in 1669. The subsidiary structures—cloister, refectory, &c., were carried out from 1655 to 1669.

The composition of the principal façade, separated from the Rue St. Jacques by a large court enclosed by a grille, is well shown in the illustration. The niches in the side bays were formerly occupied by marble statues by François Anguier; for these were substituted, in 1866, two works by Devaulx, figures of Saint Bénoit and Sainte Scholastique. In the lower pediment is the monogram of the royal foundress, grouped with a crown and palms. The upper pediment formerly contained the armorial bearings of the Queen, supported by two figures; the latter remain, but the coat-of-arms has given place to a clock dial.

The dome, constructed first in timber with a lead covering, was, in 1862-1869, strengthened by a steel construction inserted by the military engineers, who, however, carefully respected the exterior design. It is built on a circular plan,* the angles at the base of the drum being occupied by turrets.

Internally the church is cruciform in plan, and has six lateral chapels opening out of the nave, three on each side. A small elliptical apartment behind the choir is still called "L'Oratoire de la Reine," and is decorated with landscapes which are attributed to the painter Du Fresnoy. The arcades of the nave are decorated with bas-reliefs by Anguier, who is also credited with the relief decorations of the vault. Under the dome a baldacchino with six twisted columns of black marble contains the high altar; this was the design of Gabriel Le Duc, and was formerly decorated by a "Nativity" in marble by Anguier, which Napoléon removed and presented to the church of Saint Roch. This church having refused to refund the gift, it was replaced, under the Second Empire, by a copy of the original, made by MM. Lequien, Desprey, and Clement Denis.

The interior of the cupola, which is 16

* We regret that we are unable to give a plan of the church. Blondel's old folio, "Architecture Françoise," contains a plan of the church and outbuildings, but unfortunately it was found that the rather worn old engravings could not be photographed from to any satisfactory result.

mètres (about 52 ft.) in diameter, has been entirely redecorated with a large and fine composition in which Pierre Mignard, the artist, has symbolised the saints of the Old and New Testament, grouped around the Pascal Lamb. He has also grouped there the figures of Saint Louis and of Anne of Austria, the latter represented as making an offering of the church which she had caused to be built. There are also some fine paintings by Philippe and Jean Baptiste in the chapel of the Saint Sacrament.

The ancient monastery became, in 1814, a military hospital, to which the church is now attached.

THE SELECTED DESIGN FOR THE LONDON COUNTY HALL.

WE give this week, on a tolerably large scale, the elevations and section of the design by Mr. Ralph Knott which has been selected by the Assessors (Mr. Norman Shaw, R.A., Sir Aston Webb, R.A., and Mr. W. E. Riley) in the competition for the proposed London County Hall. We also give the plans of two floors to a smaller but sufficiently intelligible scale. We will give next week the Detail Elevation, which we had not space at our disposal to include in this week's illustrations.

For further comment on this and other designs the reader is referred to the first article in the present issue.

On leaving the City of London School fourteen years ago Mr. Knott, who is now in his thirtieth year, was articled to Messrs. Wood & Ainslie, of Westminster, and then entered Sir Aston Webb's offices. In our issue of February 9, 1901, we published his "Design for an Entrance Gateway to a Public Park," for which he received the second prize in the Tite Prize competition. In November, 1902, he and Mr. E. Stone Collins, as joint architects, won the second premium in the Bristol New Central Reference Library competition.

We give a portrait of the successful architect, from a photograph by Messrs. Russell & Son.

REMAINS OF THE AQUEDUCTS OF ANCIENT ROME.

THESE illustrations are from photographs taken to illustrate Dr. Ashby's paper on "The Aqueducts of Ancient Rome," printed on another page; they are referred to and described there.

CONSTRUCTION OF MOTOR ROADS.

AN important decision as affecting the preparation of plans for the construction of motor roads was given by Mr. Campion, the Examiner, on Tuesday in regard to the London and Windsor Motor Road, Tramroads, and Tramway Bill. The proposal by the Bill is to incorporate a company with a capital of 1,215,000*l.* to make a road from Hammersmith to Windsor, and the evidence called before the Examiner showed that it is intended to acquire land and make a road, which in towns, where property is expensive, will be 60 ft. wide and in the open country 84 ft. wide. Thirty-two public roads would be crossed by bridges. The motor road would be in the middle, with a tramline on either side, and for the most part the intention is to carry the road on an embankment or viaduct. Objection was taken by the London United Tramways Company and the Roads Construction Company that the plans as deposited did not indicate the nature of the work intended. One centre line only was marked, and nothing was shown to indicate what was to be done within the limits of deviation. After hearing lengthy arguments, the Examiner announced that he must report the Bill to the Standing Orders Committee. There was no real physical difference between a motor road and an ordinary road, but the difference consisted in the use to which the road was put. The novelty consisted in the attempt to combine in one scheme two works which belonged to different categories. It was a novel proposition. They might be at the beginning of a new chapter of industrial activity in regard to motor roads, and it was very important that the whole matter should be considered by the authorities. He did not consider the centre line on the plans conveyed sufficient information of the intentions of the promoters to construct a motor road with a tramline on either side of it. It was no part of his duty to point out how the plans ought to have been made, but it seemed to him that quite enough evidence had been adduced to show that the matter might have been treated in another way. The Bill will accordingly go before the Standing Orders Committee, who will decide whether it shall be allowed to proceed.

Competition.

PROPOSED NEW WALLASEY GRAMMAR SCHOOL.—In the competition for designs for the new grammar school which it is proposed to erect at Wallasey, those of Messrs. Willink & Thicknesse, of Liverpool, have been placed first.

Trade Catalogues.

MESSRS. INGRAM PERKINS & CO., timber and hardwood merchants and importers, send a long list of their sawn goods, planed goods, and hardwoods on hand, with their scantlings, trade marks, and the places in wharf sheds where they are respectively to be found.

The Sideolith Company, of Birmingham, send us a circular stating various classes of reinforced concrete construction which will be undertaken by the firm. A special feature of their business appears to be the manufacture of lintels, beams, and columns for use in very much the same way as similar members of stone, timber, and steel. That is to say, as individual units as distinguished from members employed in monolithic reinforced concrete construction. For lintels and beams of small span the reinforcement consists of skeleton frames stamped from steel plate split and expanded into a girder-like form. For beams of larger span the skeletons are produced from rolled-steel sections, and, where required, will

Mr. Ralph Knott, Architect of the Selected Design for the London County Hall.

be supplemented by additional bars and attachments. The company announce that they are prepared to undertake all kinds of work in reinforced concrete, and that they have established an advisory department of experts for the benefit of inquirers and intending purchasers.

The Pulsometer Engineering Company, of Reading, send us an abridged catalogue which they have just issued. Prominent among the appliances therein described are Pulsometer steam-pumps fitted in different ways for various purposes; centrifugal pumps, belt-driven and electrically-driven; Rossiter's patent turbine pumps for lifts up to 500 ft.; "Karoome" feed-pumping engines; "Deane" steam-pumps for general service and boiler feeding; and two useful types of pump for sinking and other purposes. The remaining pages of the pamphlet are devoted chiefly to mechanical filters and ice-making machines, but we ought to direct attention to the water-tube boiler illustrated and described on the last two pages. This is a very neat type of independent vertical steam-boiler for pressures up to 100 lb. per square inch. The catalogue quite deserves a place in the offices of architects and engineers.

The Empire Stone Company send us a circular of four pages giving a brief description, with illustrations, of a factory building at Leicester erected by the company from the designs of Mr. W. H. Simpson, architect, Leicester, and embodying the patent indented bar system of reinforced concrete, which applies to every part of the building excepting the outer brick walls. This circular deals with a class of structure for which reinforced concrete is particularly suitable owing to its rigidity and resistance to fire.

Messrs. Lloyd, Foskett, & Co. have sent us a catalogue containing illustrations of different varieties of the "Foskett" fumeless gas stoves. The special features of these stoves are the methods of controlling the supply of gas and of mixing the gas and air, and the perforated drum for distributing the heat. The makers claim that the gas is completely consumed without smell or dirt, and that the stove does not require either a flue or drip-catcher. Extracts are given from reports by Professor Watson Will, Principal of the Metropolitan College of Pharmacy, and by Messrs. Stranger & Blount, and are satisfactory as far as they go. Nearly all the so-called ornamental cases shown for use with these stoves are much too elaborate.

We have received from the Carron Company a copy of their supplementary catalogue of gas appliances, including cookers, boilers, gas ovens, boiling burners, hot closets, portable gas boilers, etc. The catalogue contains fifty-two pages and is fully illustrated and priced, and contains a complete index.

The National Radiator Company have sent us an illustrated leaflet containing a list of sizes and prices of their new "Ideal" plain four-column radiator for low-pressure water or steam heating. Ideal radiators are so well known that we need only say a word in favour of the simplicity of their design.

Messrs. Ewart & Son have sent us a catalogue containing illustrations and descriptions of their Empress, Excelsior, Climax, King, and other smoke cures. Many of these are of the revolving type, but others are without movable parts. Altogether thirty or forty different designs are shown.

Messrs. Humphries, Jackson, & Ambler, Ltd. (Manchester), have sent us a copy of their preliminary series of casements in steel and bronze, including both simple and elaborate sections of inward and outward opening side-hung casements, hopper lights, etc. The sections are drawn full size, and full particulars of the rebates required in the frames are given. Sections of moulded steel sashes ranging from 1½ in. to 2 in. are given in great variety.

Messrs. Hope & Sons (Birmingham) have sent us their new catalogue, entitled "Addenda to Our Metal Casement Catalogue of October, 1904." Some new sections of casements are given, the most important being swinging casements and casements pivoted vertically and eccentrically. The special feature of the catalogue is a series of illustrations of public buildings and private houses in which the firm's casements and steel sashes have been used. A few illustrations are given of door fasteners, leaded glazing, and patent glass roofing.

Messrs. Colledge & Bridgen (Wolverhampton) have sent us a large catalogue of 152 pages containing illustrations and prices of buliders' brassfoundry and ironmongery. Nearly every variety of lock in ordinary use is shown, and there is an excellent range of lock furniture in wood and metal. Special mention may be made of the thumb handles for upright weighted locks and of the lever handles for ordinary locks. Among the other contents of the book are sash and casement fasteners, casement stays and bolts, hat and coat hooks, door and gate hinges, various kinds of panic bolts, fanlight-catches and openers, greenhouse fittings, umbrella holders, air-grates, sliding-door furniture, and wrought-iron safes.

We have received from the Ellistown Collieries (Leicester) a copy of their new catalogue, containing illustrations of moulded and ornamental bricks, ridges, finials, copings, and sills. One section of the catalogue deals with fire-clay flue-linings, etc., and another section with stoneware pipes, traps, gullies, sinks, etc. Illustrations of a number of buildings in which the firm's goods have been used are also given.

We have received from Messrs. Archibald D. Dawnay & Sons a copy of the 1908 edition of their album of steel girders, joists, stanchions, etc. The sections given are those adapted by the British Standards Committee. A table of Dawnay's rolled-steel joists equivalent to the British Standards section is also given. The tables of compound girders occupy a great part of the book, but elaborate tables are also given of the strength of steel stanchions of various sizes and weights. The album will prove very useful as a work of reference. We have also received from the same firm a separate catalogue entitled "Dawnay's Solid Tile 'The Ideal' Fireproof Floor." This floor consists of rolled-steel joists spaced at 2-ft. centres, and between these joists solid tiles are fixed, clipping the lower flanges of the joists. The tiles are plastered underneath to form the ceiling, and the space above the tiles is filled with concrete to the required depth. The construction is simple and possesses considerable fire-resisting properties.

The Standard Engineering Company (Leicester) have sent us a leaflet containing illustrations and a short description of their patent "Stanlock" Multiple Unit System of heating and ventilating factories. Each unit contains a steam-heated coil and an electrically-driven fan, and can be arranged either to circulate the air within the factory or to draw air from the outside of the building into the factory. Units are placed about 60 ft. apart, and are heated by steam obtained from a steam-boiler system which may be either low pressure or high pressure according to the circumstances of the case. Each unit is said to be capable of circulating about 2,000 ft. of air per minute, and the heated air is driven out at the bottom of the cylinder near the level with the floor.

Messrs. Cowsland & Mackay (Glasgow) have sent us a catalogue of their ventilating appliances, including turret ventilators or cowls of various designs, concealed roof ventilators, window hoppers, fresh-air inlet panels, and tubes, etc. Many of the designs possess considerable architectural merit.

Messrs. Finch & Co. have sent us a copy of their catalogue No. 6 on Sanitary Appliances. It is a well-produced catalogue of 128 pages, well bound and admirably illustrated by means of half-tone blocks. Among the illustrations we note the siphonic, valve, and wash-down water-closets, ranges of latrines, lavatories of various kinds, baths (one of which has a weir overflow), sinks, urinals, flush-tanks, etc. There are also some illustrations of low-pressure heating boilers, radiators, pipes, etc.

We have received from the Vulcanite Company a copy of their new catalogue, entitled "Rexilite," and also a number of samples of the same material. The makers say that Rexilite is far superior to any other felt roofing, as it is impregnated with a material which cannot evaporate, and coated with a special waterproof composition. It is made in four thicknesses for roofing purposes, and in two thicknesses for damp causes, and certainly appears to be well adapted for the purposes for which it has been designed.

Messrs. Pilkington Brothers (St. Helens) have sent us a small catalogue containing illustrations of their patent Prismatic rolled glass, and of some of the buildings and factories in which this glass has been used. It is made in three different sections to suit different angles of light, and is very useful for refracting light into basements and into rooms facing narrow streets.

BOOKS RECEIVED.

REFERENCE BOOK FOR STATICAL CALCULATIONS. By Francis Ruff. Vol. I. (E. & F. N. Spon. 5s.)

TOWERS AND SPIRES. By E. Tyrrell Green, M.A. (Wells Gardner, Darton, & Co. 10s. 6d.)

I.C.S. REFERENCE LIBRARY: A Series of Text-books Prepared for the Students of the International Correspondence Schools. IX. volumes. (Scranton International Textbook Company.)

THE YEAR'S ART: 1908. Compiled by A. C. R. Carter. (Hutchinson & Co.)

THE ENCYCLOPÆDIA OF PRACTICAL ENGINEERING. Edited by Joseph G. Horner, A.M.I.Mech.E. Vol. VII. (Virtue & Co.)

Correspondence.

STAINED GLASS.

SIR,—In your excellent report of Mr. Forsyth's most interesting lecture on old glass, delivered at the Architectural Association last week, I am afraid you rather misinterpreted my meaning in the discussion which followed when I said, "The letter killeth, but the spirit giveth life."

I can scarcely conceive anyone, who has carefully compared the XIVth and XVth century glass, and English glass in particular, with that of the present day, can fail to perceive how vastly superior the old is to the new.

There are, I think, two important factors which chiefly account for this.

Firstly, the old glass was conventional. The later glass is mostly realistic, and consequently a poor imitation of nature, as all realistic work must be. Realism has always failed artistically, and always must fail. In spite of the false anatomy of the cinquecento school of painting (not that I am holding a brief for false anatomy), it eclipses in beauty the photographically correct detail of the Dutch school. Again, Turner's landscapes are not in detail true to nature at all, but glorified visions of nature, yet who will deny their superiority to the pettifogging accuracy of Nasmyth and the Ostades? One is of the earth, earthy; the other is from Heaven, and it is for this reason I said, "The letter killeth, but the spirit giveth life."

Secondly, we know too much. The best glass of the present day, in my humble opinion, most resembles the English glass of the XIVth and XVth centuries; but there is something missing, and that is the sense of colour of the old glassmakers. We have not yet attained to the luminous brilliancy combined with silvery whiteness of the past. For all our technical knowledge and all our appliances, which are "the letter of the art," have been used to kill and smother the freedom of spirit and simplicity of direct colouring, which were the glory of mediæval glass and gave it "life."

F. E. SIDNEY, F.S.A.

WANTED—A REVOLUTION IN VENTILATION!

SIR,—The present condition of ventilation of the Old Bailey is an object lesson, pointing to only one conclusion. A radical change is wanted in the methods of mechanical ventilation now in general use. In spite of lavish expenditure, the present ventilation plant at the Old Bailey has proved a lamentable failure. I have for some time past advocated and satisfactorily installed a method of mechanical ventilation which differs from all others at present existing. In the first place, nothing can be more absurd than to take the air from a height into a basement, and then force it through long flues into the various parts of the building. There is an enormous waste of power in this method, besides risk of contaminating the air; moreover, in order to supply one part of the building, it is necessary to put all the plant in operation.

By my method each room or group of rooms is supplied by air directly from the adjoining atmosphere, and has a special fan for exhausting the foul air, as well as for supplying it.

By this means each group of rooms is independent of the rest of the building, and doors and windows may be opened at will. Any system of ventilation which precludes the opening of doors and windows is condemned *ipso facto*. No mechanical ventilation, unless of gigantic proportions, can take the place of open windows in the summer-time, and at all periods of the year a feeling of oppression is experienced by those occupying rooms where the doors are closed and the windows sealed. On the other hand, when double-fan power is employed a feeling of freshness is maintained, even when the doors and windows are closed.

There is another fallacious contrivance employed in present mechanical ventilation plants, which goes far to account for their failure. I mean the employment of filters. Nothing can be more absurd than to filter the air before supplying it to the room. The result of such treatment is that the air is spoilt before it enters the rooms. A filter arrests impurities at the very place where it will polute the air supplied.

A filter for a ventilation plant is as ridiculous as the old respirators, and will soon become like the latter, an obsolete curiosity; it should be added that not only is very considerable expense attached to cleaning the filter, but its very existence adds enormously to the working cost. If the air is to retain its freshness it should be treated as little as possible. If no filter be employed, the greater part of the dust is carried through the room and discharged at the outlet, and experience shows that rooms treated in this manner are not more

dusty than ordinary rooms. At some periods of the year it is necessary to heat the air before supplying it to the room; in this process under present methods the air is contaminated, and I have found that considerable modifications are necessary before a satisfactory result can be obtained.

Although somewhat extravagant, by far the most satisfactory means of heating the air is by electricity. I have made use lately of electrical heaters which have produced absolutely satisfactory results; the air has remained fresh, and the temperature is under control by the mere use of switches.

Besides all these defects the ordinary Plenum system is founded on a principle fundamentally unsound. The air is supplied through holes near the top of the room, and removed through holes near the floor. Now everyone knows that the breath tends to rise; the consequence is that by this method the best air of the room is extracted and the fresh air supplied is fouled as it enters the room. It is obviously absurd to expect good results under these conditions. I have, after long experiment, been able to introduce air into a room at a moderate height without causing draughts, and to remove it in a corresponding manner; the result is a slow sweep of air across the room without draught.

I must apologise for having written you at such length, but the question of ventilation is a complicated one, and concerns the health and comfort of all sorts and conditions of men.

T. GLOVER LYON, M.A., M.D.Cantab.
1, *Victoria-square, London.*
January 10.

*** An article, with illustrations, describing Dr. Glover Lyon's system appeared in our issue for February 28, 1903.—ED.

THE MUNICIPAL, BUILDING, AND PUBLIC HEALTH EXHIBITION.

SIR,—Our attention has been called to a letter from Mr. H. Greville Montgomery appearing in your issue of January 25, to which we feel sure you will with your usual fairness and impartiality allow us to reply. In the first place, perhaps you will kindly allow us to give the exact title of the exhibition we are organising, viz., the Municipal, Building, and Public Health Exhibition. It will thus be seen that Mr. Montgomery is entirely in error in saying that "another exhibition on similar lines to that recently held by me at Olympia is being organised this year in London." As a matter of fact, this exhibition is the outcome of the recent admittedly successful Gas, Electrical, and Engineering Exhibitions we have had the privilege of organising, which have been largely attended by engineers connected with the various departments of municipal work, and the wish has been expressed from time to time that a thoroughly comprehensive exhibition might be held at which each of the different sections of municipal engineering might be illustrated, and all the latest and most approved appliances demonstrated. Naturally, building being so closely and intimately connected with municipal work, this word has been introduced into the title of the exhibition, and it is probably this which has caused Mr. Montgomery to view the project with alarm, because he is apprehensive that we may interfere with the success of the show which he proposes holding next year.

Mr. Montgomery goes on to say that "as several of your readers have already communicated with me on the assumption that I am responsible for this venture, I write to say that I have no connexion with it in any shape or form." We can but express surprise that any misunderstanding should exist as to who is responsible for the forthcoming exhibition, as our names appear very distinctly on all literature connected with the exhibition, and we venture to believe that our connexion with various other exhibitions is sufficient to inspire confidence in the minds of those to whom the coming exhibition will appeal. Considering that this will be something like the fortieth exhibition which has been organised by members of our firm, we are not altogether unknown; in fact, our reputation as exhibition organisers was established years before Mr. Montgomery entered into the business.

Mr. Montgomery says: "The projected exhibition to which I refer has not even the merit of novelty, as it does not touch one single section of the trade not covered by my own exhibition." Again we contend that Mr. Montgomery is wrong, for he has evidently overlooked the fact that, whereas it is true that in his exhibition certain exhibits associated with municipal enterprise were shown in the gallery, this exhibition possesses the novelty of being the first in which municipal work forms the principal feature and will occupy the premier ground-floor positions.

SMITH & BRIDGES,
Organising Managers.

THE CONSTITUTION HILL ARCH.

SIR,—Just a word or two on Decimus Burton's arch, Constitution Hill.

I am one of those whose eye is worried over incomplete work, and although I know there is some prospect of sculpture to be placed on the top in place of the Duke of Wellington and his charger Copenhagen (dethroned and trotted off to Aldershot), still it seems to be quite overlooked that there are four panels, left in rough stone, which were intended to be sculptured in *alto relievo*.

I do not care about the former, but let us first have the arch completed as intended by the architect, and its full beauty developed.

JAMES MAY.

The Student's Column.

REINFORCED CONCRETE BEAM FORMULÆ.—VI.

PRACTICAL DATA.

(10.) *Concrete.*—For the purposes of the present series of articles the only varieties of concrete considered are those composed of Portland cement, sand, and stone or gravel mixed with suitable proportions of water.

(11.) *Portland Cement.*—Only cement of the best quality and complying with the British Standard Specification or equally exacting specifications should be used in reinforced concrete.

(12.) *Sand.*—Only sharp sand, perfectly free from vegetable, organic, or earthy substances, should be employed. The grains should be of all sizes from $\frac{1}{4}$-in. downwards.

(13.) *Stone.*—Either washed pebbles or hard rock broken to suitable size and screened may be used as aggregate.

Angular particles afford a better tooth for the cement and sand than rounded, smooth pebbles.

Broken brick, coke, clinker, and slag are not recommended for reinforced concrete where strength and durability are primary considerations. Some materials of these varieties are weak, others are porous, others contain sulphur and acid, and others are liable to disintegration.

(14.) *Water.*—This constituent of concrete should be free from impurities, and in general should be added in such proportions as to form a moderately wet mixture which quakes when being tamped, and is capable of flowing with sufficient readiness between and beneath the bars of the reinforcemen'.

(15.) *Proportioning Concrete.*—In practical work the proportion of cement should be determined by weight as the volume of Portland cement for a given weight is variable. For the purposes of calculation the weight of cement may be taken at 90 lb. per cubic foot.

The proportions of sand and stone must be separately measured.

The actual proportions adopted in practice depend somewhat upon the character of the work to be executed.

For reinforced concrete beams the proportions generally adopted in the United Kingdom range from $1 : 1\frac{1}{3} : 2\frac{2}{3}$ to $1 : 2 : 4$.

Whatever be the proportions, the designer must always take into account the corresponding strength and elasticity of the mixture as accurately as values for these can be determined.

(16.) *Steel.*—In reinforced concrete beams the elastic limit of the steel governs the ultimate resistance of the construction. Regarded from this standpoint alone all varieties of iron and steel are equally suitable. It is important, however, that the metal should be of uniform quality and not liable to fracture by reason of brittleness. Bessemer and high-carbon steels are inadvisable, because they cannot be relied upon to comply with these essential conditions unless made under careful inspection and in accordance with rigid specifications.

Mild steel as made by the open-hearth process is usually of reliable and uniform quality, and if purchased from makers of repute may sometimes be employed without independent tests.

All bars must be free from scale, oil, paint and loose rust, but may be used when slightly rusty, as in that case adhesion between the concrete and the metal is increased. Calcium ferrite subsequently formed absorbs the rust and constitutes a coating which appears to be an efficient preventative against corrosion.

(17.) *Compressive Strength of Concrete.*—In actual work the compressive strength of concrete may be somewhat more or a good deal less than the strength determined by tests on specimen cubes. Much depends on the thoroughness of mixing, and the care exercised in depositing and tamping.

Concrete in the proportion of $1 : 1\frac{1}{3} : 2\frac{2}{3}$ should possess the average compressive strength of about 2,700 lb. per square inch at the age of one month, or nearly 4,000 lb. per square inch at the age of six months.

Concrete in the proportion of $1 : 2 : 4$ should possess the average compressive strength of 2,400 lb. per square inch at the age of one month, or 3,700 lb. per square inch at the age of six months.

Specialists in reinforced concrete design generally adopt standard mixtures of concrete prepared and applied by experienced contractors under such conditions as will conduce to uniform strength. This course of action, and the practical data furnished by numerous experimental and working tests, give the specialist far greater confidence than can be possessed by the occasional practitioner who has to rely upon reported data and upon contractors without special experience.

For preliminary calculations it is quite sufficient to take an average value for the ultimate compressive strength of the particular mixture of concrete to be used at the age of not more than one month, making an allowance of from 20 per cent. to 25 per cent. for possible reduction of strength owing to manipulation, and applying to the reduced value a factor of safety of 4.

An empirical formula by Mr. Thacher, and based upon the results of tests * by Mr. George A. Kimball, chief engineer to the Boston Elevated Railroad, will be found useful for approximate guidance as to the strength of concrete mixed in different proportions and at different ages.

According to Mr. Thacher's rule, the ultimate compressive strength of concrete in pounds per square inch is:—

$1{,}800 - 200\left(\frac{\text{sand}}{\text{cement}}\right)$ . . . At 7 days.
$3{,}100 - 350\left(\frac{\text{sand}}{\text{cement}}\right)$ . . . At 1 month.
$3{,}820 - 460\left(\frac{\text{sand}}{\text{cement}}\right)$ . . . At 3 months.
$4{,}900 - 600\left(\frac{\text{sand}}{\text{cement}}\right)$ . . . At 6 months.

Table VII. has been calculated by the formula for the purposes of illustration and comparison.

TABLE VII.—APPROXIMATE ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE, CALCULATED BY THE FORMULA OF MR. THACHER.

Age.	Proportions of Concrete.			
	$1 : 1\frac{1}{3} : 2\frac{2}{3}$	$1 : 2 : 4$	$1 : 2\frac{1}{2} : 5$	$1 : 3 : 6$
	lb. per sq. in.	lb. per sq. in.	lb. per sq. in.	lb. per sq. in.
7 days	1,533	1,400	1,300	1,200
1 month	2,633	2,400	2,225	2,050
3 months	3,266	2,900	2,670	2,440
6 months	4,100	3,700	3,400	3,100

One point emphasised by the figures in the table is the low strength of concrete at seven days and one month as compared with the values for three months and six months.

The differences may be and frequently are much greater in practice owing to delayed setting of the cement. That is a point which must always receive consideration.

In calculations, the designer should never take the ultimate resistance at the age of more than one month.

* "Watertown Arsenal Tests," 1890.

During the execution of work, tests should be made for the purpose of determining the actual compressive strength of the concrete so that the designer may be able to judge whether the bases of his calculations are being reasonably justified.

(18.) *Tensile Strength of Concrete.*—Although some tests give results as high as 450 lb. per square inch, the general rule is that the ultimate tensile strength of 1 : 2 : 4 concrete at the age of one month is from 200 lb. to 300 lb. per square inch, or about one-tenth the ultimate compressive strength for all mixtures.

In the formulæ which will be discussed later no allowance is made for the value of concrete in tension. This practice is advocated by the British Reinforced Concrete Committee and many other authorities.

(19.) *Shearing Strength of Concrete.*—Until recently the ultimate shearing strength of concrete was generally accepted at not more than one-fifth the ultimate compressive strength of the material.

If we are to rely upon the results obtained in 1905 by Professor Spofford at the Massachusetts Institute of Technology, and in 1905-6 by Professor Talbot at the University of Illinois, the proportion is much higher, for these investigators found the shearing strength of concrete to be from 50 per cent. to 75 per cent. of the ultimate compressive strength.

At the present time it is not advisable to adopt such values as these proportions would give unless with an exceptionally large factor of safety.

(20.) *Coefficient of Elasticity of Concrete.*—This is one of the most important factors in all modern formulæ for the design of reinforced concrete structures. The value of the coefficient has been stated as low as 301,000 lb. per square inch for 1 : 9 concrete and as high as 6,220,000 lb. for 1 : 3 concrete.

Owing to the different mixtures of concrete examined, the different conditions under which tests have been conducted, and the different ways in which results have been interpreted, very little satisfaction is obtained by comparison of the data so placed at disposal.

One of the most systematic and instructive series of tests hitherto made is that of Mr. George A. Kimball,* some of whose results are given in Table VIII.

Even accepting these values as absolutely correct for the qualities of concrete examined, we cannot be sure that similar mixtures will possess the same coefficient of elasticity, because so much depends upon the personal factor. But by the exercise of care during the preparation and use of concrete the variations ought not to account for differences of more than, say, 20 per cent.

As Mr. Kimball's results show variation of the coefficient of elasticity with variation of the load, the stress-strain line is necessarily a curve. A stress-strain curve of this nature is the basis of the *parabolic theory*, as distinguished from the *straight-line theory*, which is founded upon the assumption that the stress-strain line is straight, or approximately so, within the limits of customary working stresses.

* "Watertown Arsenal Tests," 1899.

Some American engineers suggest high values for the coefficient of elasticity of concrete. More conservative counsels prevail in this country and on the Continent.

The British Reinforced Concrete Committee take the coefficient at the constant value of 2,000,000 lb. per square inch for concrete not weaker than 1 : 2 : 4. This recommendation is in general accordance with the regulations of the Prussian Government, the French Ministry of Public Works, and other authorities.

Contrary to opinions formerly entertained, the conclusion drawn from recent experiments is that within the ordinary limits of working stresses the values of the coefficient of elasticity of concrete are approximately equal for both tension and compression.

As the tensile resistance of concrete is not usually taken into account in the design of reinforced concrete beams, the value of the coefficient of elasticity in tension is chiefly employed in calculations affecting the deformation of concrete in the tension area of beams and the stresses arising from the elongation of the reinforcement embedded therein.

CORRECTION.—In Fig. 6, p. 125., the dimension lettered λ_s actually represents the deformation of the concrete in tension, and not the deformation of the steel in tension as intended. We now print a corrected copy of Fig. 6, which will make the point clear.

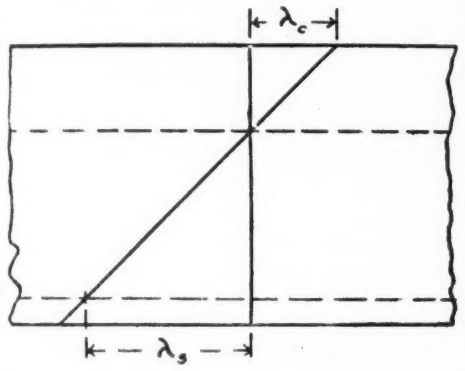


TABLE VIII.—COEFFICIENTS OF ELASTICITY OF CONCRETE (12-IN. CUBES) COMPOSED OF PORTLAND CEMENT, SAND, AND BROKEN STONE AS DETERMINED BY THE TESTS OF MR. G. A. KIMBALL, CHIEF ENGINEER TO THE BOSTON ELEVATED RAILROAD.

Proportions.	Age.	Coefficient of Elasticity in lb. per sq. in. for Different Stresses.		
		100-600 lb. per sq. in.	100-1,000 lb. per sq. in.	1,000-2,000 lb. per sq. in.
1 : 2 : 4	7 days	2,593,000	2,054,000	1,351,000
	1 month	2,682,000	2,445,000	1,462,000
	3 months	3,671,000	3,170,000	2,158,000
	6 months	3,646,000	3,567,000	2,582,000
1 : 3 : 6	7 days	1,869,000	1,530,000	—
	1 month	2,438,000	2,135,000	1,219,000
	3 months	2,976,000	2,656,000	1,855,000
	6 months	3,608,000	3,503,000	1,868,000

Obituary.

MR. LOCKWOOD.—The death occurred, at Brighton, on the 23rd ult., of Mr. Philip C. Lockwood. Mr. Lockwood was for forty-seven years officially connected with the municipality as Borough Surveyor, and later as Consulting Engineer and Surveyor. The Madeira-road and many other important municipal improvements were carried out under his supervision.

MR. SUTHERLAND.—The death is announced of Mr. John Sutherland, of Edinburgh. Mr. Sutherland was for a quarter of a century connected with the firm of D. Sutherland & Sons, builders, and on the dissolution of that firm he retired from active business. For twenty-three years subsequent to 1871 he acted as secretary of the Master Builders' Association.

MERCHANT VENTURERS' TECHNICAL COLLEGE, BRISTOL.—The Merchant Venturers' Technical College, in Unity and Denmark streets, Bristol, which was burned down in 1906, is being rebuilt. Mr. A. W. S. Cross is responsible for the plans.

General Building News.

NEW CHURCH, MISKIN, LLANTRISANT.—A new church, dedicated to St. David, has been erected in this hamlet. The building will accommodate 190 people, and is cruciform in plan. The dressings and tracery are of Quarella stone, and the walls inside are lined with ashlar work of the same material. Externally, the walls are faced with Quarella stone, hammer-dressed coursed work. The roofs of the nave, transepts, and chancel are open and constructed of oak left clean from the plane. The cost has amounted to 6,300*l.* The building is lighted with the "Litz" light, installed by Messrs. Alger & Sons, Newport, and the heating is done by hot air on the Grundy system. The wood and stone carving has been executed by Mr. William Clarke, of Llandaff, from the designs of the architect, Mr. Bruce Vaughan, and the church has been built by Mr. Philip Gaylard, of Bridgend.

CHURCH RESTORATION, GOULCEBY.—The village church of Goulceby, situated on the Lincolnshire Wolds, has just been consecrated, after having remained for many years unused and incomplete. The restoration and completion of the work was carried out by Messrs. Mawer Brothers, Louth, under the supervision of Mr. G. H. Allison, architect, of the same place.

S. MARY'S CATHEDRAL, GLASGOW.—Additions have been made to S. Mary's Episcopal Church, Glasgow, to provide more adequate accommodation for additional requirements now that it has been raised to the status of a cathedral. These extra buildings have been erected on the space outside the north transept, and consist of a Bishop's vestry, a hall with accommodation for about 200 people, a business vestry, and other offices, numbering in all eight rooms. The additions were made from plans prepared by Mr. Horatio K. Bromhead, architect.

WESLEYAN CHURCH AND SCHOOLS, GREAT HOUGHTON.—The Wesleyan Methodists of Great Houghton have erected a new church and Sunday-school, at an estimated cost of 1,400*l.* The building is of brick, with Wombwell stone facings, and was built from plans prepared by Messrs. Garside & Pennington, architects, of Pontefract and Castleford.

CHURCH RESTORATION, CHERTSEY.—Chertsey Parish Church has just been reopened after having been closed for some months while the work of restoring and improving it has been in progress. The west gallery has been taken down, and the XIIIth century arch which had been built in behind it is exposed. New pews have been fitted into the sides of the galleries. This part of the work was carried out by Mr. C. J. Blayney. The decorations have been carried out under the supervision of the architect, Mr. T. G. Jackson, R.A., by Messrs. Waterer & Sons.

CHAPEL REBUILDING, RISCA.—The reopening of Zoar Presbyterian Church, Risca, has just taken place. The premises now form practically a new chapel, with seating accommodation for 450. A school and classrooms have also been provided. The total cost is about 1,600*l.* The contract has been carried out by Mr. John Pritchard, contractor, Risca, the architect being Mr. Wyndham Moses, of Risca.

MEMORIAL CHAPEL, EDGWARE.—A small chapel forming an annexe to the cloister of the Convent of St. Mary of Nazareth, Edgware, is being built as a memorial to the late Rev. Mother, whose grave is in close proximity to the structure. It is built of red brick, with dressings, etc., of Ancaster and Portland stone. The roof is covered with copper. The work is being carried out by Mr. W. Parmenter, of Braintree, from the design of Messrs. Jas. Brooks, Son, & Adkins, architects.

WESLEYAN SCHOOLROOM, HEXHAM.—New school buildings have been erected in Hexham by the Wesleyan Methodists in that town. The erection of the school premises, caretaker's house, and extensions to the church has been carried out from designs prepared by Mr. J. Walton Taylor, architect, of Newcastle-upon-Tyne, by Mr. Thomas Dorin, builder, of Hexham, and the total estimated expenditure is 2,700*l.*

PROPOSED COUNCIL SCHOOL, CHELMSFORD.—The Chelmsford Education Committee have decided on the erection of a new school on a site in Hill-road, Springfield. The school is to provide accommodation for 750 children, and Mr. W. H. Petwee has been engaged as architect for the proposed work.

CHURCH SCHOOLS, MICKLEHAM.—The new Church of England Schools which have been opened in this village provide accommodation for 120 children, and comprise a central hall, from which each of the three separate classrooms open, and there are also separate cloakrooms and lavatories. The architect was Mr. H. W. Burrows, Westminster, and the builders Messrs. Thompson & Beveridge, London. The total cost of the undertaking amounts to about 2,700*l.*

WESLEYAN SCHOOLS, LOWESTOFT.—New schools have been erected in connexion with the High-street Wesleyan church in Crown-street. The architect was Mr. Scott Cockrill, and Mr. T. H. Yelf, of Norwich, the builder. The whole scheme involves a sum of about 4,000*l.*

PARISH HALL, SWANSEA.—A parish hall has been erected in connexion with Christ Church Parish, Swansea. The building will cost, with land acquired, 2,000*l.*, and is of native rubble walling with dressed native quoins. It is lighted by gas installed by Mr. T. J. Hill, plumber. The roof is supported by steel principals, supplied by Messrs. Rees & Kirby, Morriston. Messrs. Bevan Brothers, Swansea, supplied the heating apparatus. Mr. Richard Lacey, Brynmill, was the builder and contractor, and the architects were Messrs. Wm. Cousins & Son, Swansea.

INSTITUTE PREMISES, DIGBETH.—The buildings of the new Digbeth Institute, erected in connexion with Carr's-lane Chapel, stand on the old battery site in Digbeth, opposite Rea-street, and are arranged in three blocks. At the main point is a block comprising a *café*, reading-room, superintendent's office, rooms for sisters and lady workers, etc., together with kitchen and caretaker's accommodation. The ground floor of the front block is taken up by three entrances to the different parts of the premises and four shops. Behind this and separated from it by a crush-hall containing double flights of stone staircases is the large hall, 71 ft. by 66 ft., seated with chairs on the floor and lift-up seats in the gallery for 1,400 persons. The third block is at the rear of the site, comprising an assembly-room with nine classrooms on either side, and rooms for infants' school and classroom at one end, over which are arranged rooms to be occupied by the Factory Girls' and other Guilds. The main hall of the school is 60 ft. by 33 ft. The materials used are sand stock bricks, with grey terra-cotta dressings. The front is further enriched with terra-cotta figures modelled by Mr. Benjamin Creswick. The lobby walls are treated entirely in terra-cotta, and the floor is paved with Hopton wood stone. The main entrance corridor walls and staircases, as also the walls of the *café*, are lined with Van Straaten Dutch tiles, and the floors are paved with green and white marble Terrazzo. The cost of the building, exclusive of furniture, is upwards of 20,000*l.* The architect is Mr. Arthur Harrison, of Birmingham.

PUBLIC FREE LIBRARY AND MUSEUM, WORTHING.—Work is now proceeding on the erection of a new free library and museum at Worthing. The building occupies a rectangular site in Chapel-road, and has been set back 40 ft. from the road. The building is constructed of red brick and Monks Park Bath stone, and is roofed with green slates. The library and museum are practically two distinct buildings, so far as the public are concerned, having separate entrances although they are joined together in one block and follow the same design. The building is one of two floors and a basement, the ground floor area covering about 9,000 ft.. The plans were prepared by Mr. H. A. Crouch, and the Council accepted the tender of Messrs. Wisdom Brothers, of Isleworth, for the erection of the building, the contract price being 5,702*l.* 6s. 11d. for the library, 4,221*l.* 6s. for the museum, and 293*l.* 3s. 5d. in addition for the boundary railings, gates, etc. Mr. A. Hutton is the foreman of the works, and the clerk of works is Mr. H. K. Aplin.

PROPOSED MUNICIPAL IMPROVEMENTS, BIRMINGHAM.—On the 28th ult. an inquiry was held at the Birmingham Council House by Mr. F. H. Tulloch, an Inspector of the Local Government Board, into an application by the City Council for sanction to borrow 28,783*l.* in connexion with the proposed extension of the Council House and Art Gallery, and 4,000*l.* for purposes of public walks and pleasure grounds. Mr. H. A. Pritchard, acting Town Clerk, in making the application for the loan in connexion with the proposed extension of the Council House and Art Gallery, explained the whole scheme of which the expenditure of 28,783*l.* formed part. The total cost of the proposed buildings was estimated at 150,000*l.*, and the buildings were so disposed on the site as to leave space at the rear for further extension. The materials used externally in the street fronts would be granite and Darley Dale stone, and the back portion to the courtyards in the rear would be of brick. The roofs would be covered with green Westmorland or some other approved slates. The work throughout would be of fire-resisting material. The Council had decided to proceed with the excavation of the foundations and the construction of the lower floor only at present, and therefore they did not ask the Local Government Board for sanction to borrow more than 28,783*l.* Mr. H. V. Ashley (architect) explained the plans. Mr. Pritchard added that the Council had accepted a contract for the work, and the contractor was ready to begin. The next inquiry had reference to the application for permission to borrow 4,000*l.* for purposes of public walks and pleasure grounds, and, evidonce having been given and the details of the scheme explained to the Inspector, the inquiry concluded.

PUBLIC OFFICES, OXENHOPE.—New public offices for the district of Oxenhope were recently opened. The building provides a meeting-room for the Council and accommodation for officers, and the total cost, including land and furnishing, has been about 746*l.* It has been erected from the plans of Messrs. J. Haggas & Sons, Keighley.

MEMORIAL HALL, MANSFIELD WOODHOUSE.—A parish-room, known as the Turner Memorial Hall, has been opened at Mansfield. The building, which was designed by Mr. F. P. Cook, architect, Mansfield, consists of a large hall to seat 300 people, as well as two smaller rooms, entrance-halls, sculleries, and outbuildings.

CAFÉ, HALIFAX.—A new *café* is being built in Commercial-street, Halifax. The architect of the work is Mr. W. Clement Williams, and the contractors as follow:—Mason, Messrs. Craven, Robinson, & Sons; Carrara Faience, Messrs. Doulton & Co., London; joiner, etc., Messrs. Frank Moore & Sons; plumber and heating, etc., Mr. Thomas Boocock; slating, plastering, and concreting, Messrs. J. Bancroft & Son; ornamental plastering and internal decorating, Messrs. Jonas Binns & Sons; structural steel and cast-iron, Messrs. Charles Auty & Co., Leeds; steel roofing, Messrs. S. Parsons & Co., Bradford.

HYDRO, SKEGNESS.—A new hydropathic establishment is being erected at Skegness. The architect is Mr. R. C. Sutton, of Nottingham, and the building contract is in the hands of Messrs. Thompson, of Nottingham and Louth.

PUBLIC LIBRARY, SOUTHWARK.—The new public library in the Old Kent-road has just been opened. The building has been erected by Messrs. F. & H. F. Higgs, of Loughborough Junction, from the designs and under the superintendence of Mr. Claude Batley, architect, and is of Portland stone, roofed with Westmoreland slates.

NEW POST-OFFICE, BIRKENHEAD.—The new Birkenhead Post-office occupies an island site at the junction of Argyle-street and Oliver-street, and was designed by Mr. W. Pott, of H.M. Office of Works. It is executed in Portland stone and Ruabon red brick. It is expected that the new building, the shell of which has cost 12,000*l.*, will be ready for occupation by the end of March. The contractor is Mr. J. E. Gabbuti, and the work has been supervised by Mr. G. Petrie, clerk of works.

WORKMEN'S LIBRARY, ABERBARGOED.—A workmen's library has been built at Aberbargoed, at a cost of about 3,000*l.* Messrs. James & Morgan were the architects, Mr. Fred Bond, Cardiff, was the builder, and Mr. J. M. Greenhow, clerk of works.

Sanitary and Engineering News.

HALIFAX SEWERAGE SCHEME.—The Halifax Highways Committee have decided to recommend the Town Council to apply to the Local Government Board for sanction to borrow 9,000*l.* for the purpose of the sewerage of Northowram, in accordance with the scheme of Mr. J. Lord, the Borough Engineer, which was approved by the late Mr. J. R. Strachan, of London, who was called in to advise upon the matter.

DUNDEE WATER SUPPLY.—Dundee water distribution is to be improved by the erection of a new measuring cistern and valve-tower, for which offers have just been accepted. The alterations are estimated to cost about 7,000*l.*, and Mr. George Baxter is the engineer for the work.

YARDLEY SEWERAGE SCHEME.—Mr. A. A. G. Malet, Local Government Board Inspector, recently held an inquiry at the Council House, Sparkhill, into the application of the Yardley Rural District Council for sanction to borrow 15,200*l.* for the provision of additional sewage filters at the Cole Hall Sewage Farm. Mr. A. W. Smith, Surveyor and Engineer, explained to the Inspector the general sewerage scheme for the district of Yardley, and the Clerk to the Council (Mr. F. L. Thompson) gave particulars of the growth of the district and the need for further provisions for the disposal of sewage.

COMBINED DRAINAGE.—In regard to the amended draft Bill relative to combined drainage which some little time ago was unanimously approved by the conference of metropolitan city and borough councils, twenty-two of the twenty-eight metropolitan borough councils had up to January 28 passed resolutions in favour of the measure. The Public Health Committee of St. Pancras, which took a prominent part in the framing of the Bill, in a report issued on Tuesday, stated that they are confident that it will be well backed and introduced into Parliament this session.

EDINBURGH WATER SUPPLY.—The members of Edinburgh and District Water Trust, who were appointed to visit a number of English towns for the purpose of inspecting the mechanical filters for the water supply of the district, have returned to Edinburgh, and, according to the *Edinburgh Dispatch*, they are practically unanimous in their approval of the mechanical filter. They are, therefore, likely to recommend that mechanical filters should be installed at Fairmilehead instead of sand filters.

Foreign.

FRANCE.—The ancient church of St. Séverin, at Paris, has by recent operations been disengaged from the structures which surrounded it, and the "Vieux Paris" Committee have passed a resolution demanding that no new building on the site should be carried to such a height as to injure the effect of the church. It has also demanded the formation of a square which should isolate the church and keep open to view the fine XVth century cloister to the south of the tower.——In consequence of a legacy left with that object, the Académie des Beaux-Arts will now be able to throw open an annual competition for a studentship for girls. ——The works for the deepening of the new outer port of Havre will be shortly commenced. The cost is estimated at nearly two million francs.——The Municipality of Troyes are about to undertake important works in new buildings and street improvements, at a cost of 630,000 francs. One of these is the erection of a new entrance to the museum.—— The Orléans Railway Company are about to enlarge their station at Blois.——The Municipality of Mâcon have voted 150,000 francs for the erection of a Salle des Fêtes.——The Municipal Council of Biarritz have resolved to purchase the Hôtel de l'Europe, in view of a proposed enlargement of the Place de la Liberté.——The Municipal Council of Fécamp have voted a sum of 500,000 francs for the carrying out of a Baths establishment, to replace the existing Casino, which is in course of demolition.——The alto-relief of Dalou's group "La République," left unfinished by the late sculptor, and completed by his pupil Becker, is to be placed in the Petit Palais. The plaster model of the work will be placed in the Mairie of the Xth arrondissement, in the Salle des Mariages.——The death is announced, at the age of forty-five, of M. Gaston Jules Mauber, architect, pupil of M. Guadet. He obtained a travelling studentship at the Salon of 1892.

GERMANY.—Messrs. Heilmann & Littmann's new Anatomy Schools in Munich form a very peculiar and remarkable group both as regards plan and elevation. The feature of the long façade is a flat-domed, circular hall on the upper floor, with five apse-like excrescences occupying the ground and first floors. The entire wall-surface is divided into transomed mullion windows to give the maximum amount of light, for the upper hall is the microscope laboratory and the apses are the dissecting-rooms, each one fitted with fifteen tables. The building is of ferro-concrete throughout, and is constructed with a lightness only attainable in that material.——One of Munich's most ancient buildings, the Church of the Augustinians, now used as a toll-office, is threatened with destruction. It forms one of a fine group of buildings —the Jesuit Monastery, now the Academy of Sciences, the wonderfully decorative Renaissance church of St. Michael, and the twin-towered Frauen Kirche. As these buildings depend largely for their effect on the relation they bear to each other, the demolition of any one of them would react on the remainder. The Augustinians Church was built at the end of the XIVth century, and in 1620 was enlarged and magnificently decorated in the interior. It was desecrated in 1803, when its many treasures were scattered, including the fine organ, altars, and paintings by Rubens and others.——In a paper on the new railway-station of Hamburg, the writer states that between the years 1880 and 1905 the takings on the Prussian State railways have increased fivefold, and during the latter year reached the sum of 350 million marks. This enormous increase in traffic necessitated the enlargement or rebuilding of stations, some at great expense; for example, Dresden has recently spent sixty million, Hamburg 64·5 million, and Leipzig 128 million marks on their respective stations. The increase in rolling stock is also remarkable; 1,200 extra engines and 20,000 passenger coaches have been turned out for use

in the present year.——In the competition for a gymnasium for Friedberg fifty designs were submitted. Two first premiums of 500 marks each were awarded to Messrs. Fritz Landauer, of Frankfort, and Eugen Seibert, of Darmstadt.

ITALY.—The numerous works of art scattered about the Vatican and the Lateran are to be collected and exhibited in the ground-floor galleries of the wing added to the Belvedere Court by Pius IV. As these galleries were originally not designed for pictures, the lighting is defective and the wall-spaces cut up by niches and doorways. However, great efforts are to be made to overcome these difficulties, and the Vatican storerooms are to be searched for suitable furniture, hangings, and carpets. Judging from the success attending the reopening of the Borgia apartments, we may hope for a similar success in this case, for names such as Francesco Ehrle and Ludovico Seitz are guarantees of good work.

AUSTRIA.—On the 11th ult. the Society of Austrian Engineers and Architects, Vienna, celebrated the sixtieth anniversary of its foundation by a social gathering in the Society's Institute buildings. The President, Professor Josef Klaudy, received a telegram of congratulation from the Emperor, who this year also celebrates the sixtieth anniversary of his coronation.

SWITZERLAND.—The new Exchange, Bâle, was opened on the 6th inst. It was built from the design which won the second premium in the competition, the work of Messrs. Bischoff & Weideli, of Zurich.

HOLLAND.—The work of improving the North Sea Canal, which connects Amsterdam with the North Sea at Ymuiden, is now completed. The bed of the canal is 50 metres wide, the depth 10·30 metres, and the slope of the sides 1·3. Formerly the largest vessels that could use the canal measured 175 metres by 17·75 broad, with an 8-metre draught; now the canal can take vessels 220 metres by 24 broad, with a draught of 9·2 metres. For the beacon of Ymuiden Harbour an experiment is being made with a new light, 1,000 candle-power, which burns blue gas on the Pintsch system, Berlin. A powerful electric flash light is also to be provided at a cost of 160.000 kronen. The canal itself, like the Kiel Canal, is lighted by 226 lamps of twenty-five candle-power each, placed at intervals of 240 metres.

Miscellaneous.

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.—Mr. George Jackson, architect and surveyor, has removed his office from 31, Charing-cross, to Beltinge, Herne Bay.

NEW SPECIFIC GRAVITY BALANCE FOR ROCK SPECIMENS.—In using the ordinary form of balance for determining the specific gravity of specimens of rock, values have to be inferred from those of small chips, and in consequence the risk of serious error is always present unless the rock is of very homogeneous composition and texture. An improved type of specific-gravity balance devised by Mr. T. H. D. La Touche, and described by him in *Nature*, is so arranged that a large specimen can be suspended from the shorter arm of the beam while the longer arm, divided along its upper edge into millimetres, is used with a sliding weight for direct measurements from which the required specific gravity can be found by reference to a table of equivalents. Immediately below the end of the shorter arm of the balance is an arrangement for raising and lowering a jar of water in which the specimen is immersed at the proper time. Considering the manifest advantages of this appliance it is somewhat surprising that the only example is one constructed for the laboratory of the Indian Geological Survey. Other geological laboratories would find the balance extremely useful, not only on account of its superior accuracy, but also because the saving in time made possible by its use is very great.

A DORCHESTER PAGEANT.—It is proposed to celebrate next year a pageant for which ample accommodation is supplied in the ancient amphitheatre. The town derives its history as having been the chief seat of the Durotriges cited by Ptolemy; it is the Dornceaster of Saxon times, and the Villa Regalis whence the charter of 937-8 to Milton Abbey was addressed by Athelstan, who established two mints there. The Roman amphitheatre, known as Maumbury Rings, close to the railway-station, has an arena about 220 ft. by 150 ft., with sides of chalk ramparts rising to nearly 30 ft. high; the outer measurements are 343 ft. by 339 ft. Shady avenues occupy the site of the walls of the Roman Durnovaria, or Durinum, on the Varia, now the Frome. A fragment *in situ* at the top of High West-street has been railed in. Of the four old parish churches that of St. Peter has not been rebuilt; it is mainly of the Perpendicular period, with transitional mouldings in the south doorway. Two years ago Mr. Ponting, diocesan architect, repaired the roof, and Mr. W. D. Caröe reinstated the tower. In 1899 a beautifully-wrought Roman pavement was found outside the walls near the amphitheatre; a similar large tessellated pavement was discovered, 1745, in a garden near South-street, and a great number of Roman coins were dug up in making foundations for the county gaol in 1789-95. King Sweyn besieged and devastated the town in retribution for the attempted general massacre of the Danes by Ethelred. Dorchester suffered severely from three fires in the XVIIth and XVIIIth centuries; during the Civil War it was surrendered to Lord Carnarvon, and then held by the Earl of Essex. In Dorchester Judge Jeffreys held the infamous Bloody Assize.

PRODUCTION AND CONSUMPTION OF CEMENT IN CANADA.—According to the voluminous report just issued by Mr. Richard Grigg (Special Commissioner of the Advisory Committee of the Board of Trade on Commercial Intelligence) upon the conditions and prospects of British trade in Canada, the consumption of Portland cement in the Dominion increased from 872,966 barrels in 1901 to 2,814,267 barrels in 1906. The value of the cement imports from the United Kingdom was 148.818 dollars in 1902, and 223,118 dollars in 1906; from the United States 588,510 dollars in 1902, and 689,380 dollars in 1906; from Belgium 119,119 dollars in 1902, and 45,109 dollars in 1906. Imports from Japan began in 1903 with 17,485 dollars, and increased to 28,252 dollars in 1906. The general rate of duty on the short ton is 12½ cents per 100 lb., or 2 dollars 50 cents per ton; the duty on British cement is 90 cents less per ton, owing to the British preference. The output of cement in Canada itself was valued at 765,876 dollars in 1900, and 2,271,002 dollars in 1905; it will be seen that there was thus an increase of 196 per cent. in five years, whilst the increase in import in five years was only 12 per cent. The output in 1901 was 317,066 barrels, in 1905 it was 1,541,568 barrels, and in 1906 2,152,562 barrels. Fifteen companies were operating plants during 1906, with a total daily capacity of 10,500 barrels; at least four additional plants were under construction, of which the total initial capacity will be about 4,700 barrels. The average price per barrel at the works in 1906 was 1 dollar 49 cents., as compared with 1 dollar 42 cents in the previous year. The imports of Portland cement into Canada in 1906 were valued at 778,706 dollars. This is equivalent to 694,505 barrels of 350 lb. each at an average price of 1 dollar 12 cents. The import in the previous year was equivalent to 917,558 barrels, at an average price of 1 dollar 24 cents. The use of Portland cement is being widely extended, as many dwellings are being constructed in which walls, columns, floors, and beams (the latter reinforced) are formed of nothing but concrete. The reinforced concrete building is desirable in the west and north-west, where fire protection has not reached a high standard, and where every precaution must be taken against the possibility of damage by fire. Moreover, the rapid increase in the cost of all kinds of lumber helps to encourage the use of concrete, and the buidings constructed of it are well reported on. The wholesale price of Canadian and American cement is 1 dollar 90 cents to 2 dollars per barrel in cotton bags, and 2 dollars 20 cents to 2 dollars 30 cents in wood barrels, the weight in both cases being 350 lb.; there are four bags of 87½ lb. each net to a barrel, and 10 cents must be added to the foregoing prices for each bag. The bags, when in good condition, are repurchased at the same figure—10 cents each. Where paper bags are used instead of cotton, the charge is 2½ cents for each, or 10 cents per barrel. British and European cement is 1 dollar 80 cents to 1 dollar 90 cents per barrel, in jute sacks of 82⅔ lb. each, including price of sacks, and 2 dollars 10 cents to 2 dollars 30 cents. in weight per 350 lb. gross. Belgian cement costs 1 dollar 75 cents to 1 dollar 90 cents per barrel in wood. Hollow blocks, measuring 18 in. by 8 in. high, or 1 sq. ft., for building purposes, are quoted at 27 to 35 cents per block, the thickness being 8 in. Although the Canadian demand must (Mr. Grigg concludes) continue for a long time to increase, yet the growth of the home manufacture is so rapid that there is not likely to be opportunity for any great development of British trade in this direction.

A CONSULAR HINT.—Mr. Casement, C.M.G., British Consul at Santos, Brazil, in a report to the Foreign Office, writes, respecting the prosperity of that place:—"Port and harbour works, railway extension, building generally are all matters of certain and speedy development in a rich and prosperous community; and, while Italy will largely supply the labourers needed, it is likely that Germany and the United States, and Belgium possibly, will furnish much of the material, unless British enterprise should prove itself equally alert in this growing field." Mr. Casement adds that cement was imported at Santos to a value of 758,553 milreis in 1905, and 1,476,570 milreis in 1906. The amount used is likely greatly to increase. A new company was registered in the beginning of 1907 under the name of the "Fabrica de Cimento Italo-Braziliera," with the object of manufacturing cement in the town of Rodovalho, in the interior of the State of Sao Paulo. The headquarters of the company are to be in the city of that name, with a capital of 800,000 milreis.

HOUSES OF HISTORICAL INTEREST IN LONDON.—Encaustic ware tablets have been affixed upon No. 28, Broad-street, Soho, at one time the home of William Blake, who was living there in 1780; No. 39, Rodney-street, Pentonville, wherein James Mill lived and his son John Stuart Mill was born; No. 18, Kensington-square, where John Stuart Mill resided in 1840, with his mother and sister, when he was at the India House; and No. 31, Golden-square, a home of John Hunter, the celebrated surgeon and anatomist.

CLARIDGE'S HOTEL, MAYFAIR.—An entertainment was given recently at the hotel to celebrate the centenary of its foundation. M. Mivart, under the Prince Regent's patronage, established the Hotel Mivart in a house, to which he subsequently added four others, in Brook-street, Grosvenor-square. About fifty-five years ago he disposed of his business to Mr. and Mrs. Claridge, who made it over to a proprietary company, for which Mr. W. D. Caröe designed the courtyard, illustrated in the *Builder* of June 13, 1891. The proprietors then renewed the lease and sold their interest to a limited company, then known as the Savoy Hotel Syndicate, who sold all the effects (including some good furniture of the Louis XV., Louis XVI., and Empire periods) in the autumn of 1894 preparatory to the rebuilding of the premises. The plans and designs of the new hotel were made by Mr. C. W. Stephens, the interior decorations of the ground floor, with the dining-room, and part of the first floor being designed by, and carried out under the supervision of, Messrs. Ernest George & Yeates. The contractors, Messrs. Trollope, used Essex bricks (as adopted on the Grosvenor estate), with brick dressings, and red Mansfield for the balconies and general stonework. A glazed dome covers the central quadrangle with its winter garden. The plans provided for suites on the upper floors, so as to continue the private character of the hotel, and, upon the first floor at the angle of Brook and Davies streets, for a royal suite (with a separate entrance and staircase) which has always formed a particular feature of an establishment where a large number of royal and illustrious personages, in exile or travel, have sojourned during the past hundred years.

PROPOSED MEMORIAL TO SIR JAMES FERGUSSON AT AYR.—The Committee in connexion with the proposed memorial to Sir James Fergusson have commissioned Mr. W. Goscombe John, A.R.A., to carry out the execution of a portrait statue in bronze about 8 ft. high on a suitable granite pedestal, at an estimated cost of 1,200*l.*, in the town of Ayr.

MUSEUM OF ART, NEW YORK.—Mr. J. Pierpont Morgan has lent to the Metropolitan Museum of Art the two groups—"Our Lady of Pity" and "The Entombment"—which Pons de Gontant erected, at the close of the XVth century, in the chapel of the Château de Biron. The collection is further enriched by the acquisition of bronzes, marbles, and vases, eighty-three in number, illustrative of the best periods of Greek and Roman art, including a small statue in bronze of a discus-thrower of the præ-Pheidian age, a torso of a boy after the Pheidian school, and a finely-modelled relief, in marble, of a rider reining-in his horse, which is attributed to the later half of the IVth century.

OXFORD UNIVERSITY.—In agreement with proposals made by the Hebdomadal Council, a sum of 1,000*l.*, allocated to University purposes from out of the Hulme Trust surplus, is placed by the Brasenose College authorities at the disposal of the Visitors of the Ashmolean Museum and the University Galleries, and the money will be expended upon structural improvements of, or additions to, the museum and the galleries and the Ruskin Drawing School.

FIRST GARDEN CITY, LETCHWORTH.—In their report for the twelve months ended on September 30 last, the directors state that the population has increased from 3,000 to 5,000, the factories from five to ten, and the number of the factory hands from 240 to more than 900. On September 30 Messrs. Drivers, Jonas, & Co., in conjunction with Messrs. J. R. Eve & Son, made a revaluation of the property, and reported that at that date the estate was, in their opinion, worth 379,500*l.*, exclusively of amounts for timber or gravel pits, and the gas,

water, and electricity works as commercial undertakings, so that there is an appreciation to the extent of 131,693*l.* in the value of the property above its cost. Certain sums in respect of general development, preliminary expenses, and general revenue and expenditure account having been written off, the net increment stands at 97,046*l.* 6s. 3d. The directors have undertaken the first part of a scheme, of which the total cost is computed to be 30,000*l.*, for the laying out of three and three-quarter miles of new roads, three and a quarter miles of sewerage, three and a half miles of gas and water mains, and ancillary works. They will borrow 20,000*l.* from the General Lands Drainage and Improvement Company, Ltd., and propose to raise 20,000*l.* additional share capital in the current year, to meet the expense of that scheme and of other necessary outlay.

THE PROPOSED RESTORATION OF HOLYROOD.—At a recent meeting of the Lord Provost's Committee some discussion took place in regard to the restoration of the chapel at Holyrood. The subject came before the Committee as a result of a deputation which appeared before the Town Council urging that action should be taken by the Corporation with the view of securing that the 40,000*l.* left by Lord Leven and Melville should be devoted to the restoration of the abbey. The Committee were informed—on what authority was not disclosed—that the present Earl and his mother are disposed to undertake the work of restoration apart from the action of the trustees of the late Earl. The Committee, it is understood, are not averse to the project, but the feeling was expressed that the Committee was not, in the circumstances, in a position to move in the matter. It was therefore agreed to leave the question in the hands of the Lord Provost, in order that his Lordship may take such action as the result of his inquiries may seem to render prudent.—*Scotsman.*

WESLEYAN CHAPEL BUILDING.—The Secretary of the Wesleyan Conference has just issued the annual report of the chapel building department in the Methodist Church for 1907. It is stated that during the year 475 cases have been sanctioned. These include seventy-one new chapels, twenty-six ministers' houses, thirty-three schools, 145 enlargements, seventy-three organs, six soldiers' and sailors' homes, and 121 modifications (mostly extensions) of previous plans. Thirty-three new chapels, providing sitting accommodation for 10,982 hearers, are to be erected in places where previously there was no Methodist chapel. The remainder provide accommodation for 12,156 hearers, instead of 8,232 in the old buildings, so there is a net gain of 14,906 sittings. The cost of these erections amounts to 431,110*l.*—an increase on the year of 90,000*l.*

EDINBURGH SCHOOL OF ART.—The Committee, after consideration of the record of all students who completed the five years' curriculum of the architectural section of the school in July last, have awarded a travelling scholarship of 35*l.*, tenable for four months, to Sydney H. Miller, and one of 25*l.*, tenable for three months, to David J. Chisholm, along with diplomas of merit. Diplomas have also been awarded to John Ross MacKay, Douglas P. Hall, Henry R. Williamson, and Robert M. Dickson, and certificates to John Duncan, Arthur L. King, John Meldrum, and James T. Thomson.

NUISANCES ON HIGHWAYS.—In the recent case Rex *v.* Bartholomew, the owner of a coffee-stall was indicted for a common nuisance for placing and keeping a coffee-stall in a public carriageway and obstructing the same. The jury found that the stall was an obstruction, but that it did not practically interfere with the traffic in the street. On this dubious finding the learned judge convicted the defendant, holding that if an obstruction was created it was no answer to say sufficient room was left for the traffic. The Court of Crown Cases Reserved has quashed the conviction on the ground that the finding of the jury did not define the obstruction to amount to a nuisance.

PAVING WORKS IN MARYLEBONE.—At the sitting of the St. Marylebone Borough Council on Thursday the following list of works were agreed to be carried out during the ensuing financial year:—Wood-paving renewals—(1) The wood-paved carriageway of Holles-street, at an estimated cost of 622*l.*; (2) the wood-paved carriageway of Marylebone-road by Euston-road, at an estimated cost of 742*l.*; (3) the wood-paved carriageway of York-place, at an estimated cost of 1,567*l.*; (4) the wood-paved carriageway of Princes-street, at an estimated cost of 693*l.*; (5) the wood-paved carriageway of Berners-street, and the cab-rank re-asphalted, at an estimated cost of 1,814*l.* Substitution of wood pavement for macadam in the following roads—(1) Devonshire-street (macadam) from western end in High-street to Portland-place, at an estimated cost of 3,239*l.*; (2) Gloucester-street (macadam), at an estimated cost of 904*l.*; (3) north side of Portman-square (macadam), at an estimated cost of 1,619*l.*; (4) Welbeck-street (macadam), from Henrietta-street to Wigmore-street, at an estimated cost of 624*l.*; (5) New-street-mews (pitching), by St. Cyprian's Church, at an estimated cost of 248*l.*; (6) New Quebec-street (pitching), at an estimated cost of 407*l.* Asphalt in the following carriageways—(1) Earl-street (pitching) from west side of Salisbury-street to Lisson-grove, at an estimated cost of 1,027*l.*; (2) Great Barlow-street (pitching), at an estimated cost of 377*l.*; (3) Wells-street (macadam), from Castle-street East to a point just north of Marylebone-passage, at an estimated cost of 100*l.*

METROPOLITAN WATER BOARD.—At the fortnightly sitting of the Metropolitan Water Board on Friday last week it was agreed to carry out the following amongst other works:—Repairs at Staines Reservoirs (estimated cost 600*l.*), wharfing and timbering 525 yds. of the New River at Enfield (350*l.*), remove accumulated sand and paint hanging rods to pumps at Turnford Well (304*l.*), construct new sanitary conveniences at Battersea engine-house (140*l.*).

NEWCASTLE TOWN HALL.—The Newcastle City Engineer, Mr. Kirkpatrick, has submitted a report to the Markets Committee of the Newcastle Corporation on the Town Hall concert-hall in regard to the exits and entrances. He states that he has again examined the concert-hall, and is more than ever impressed with the defects of the existing exits in case of panic, and, while suggesting a number of improvements, expresses the opinion that no amount of alterations and money spent upon a building of such a wedge shape can ever make it really satisfactory as a place of public resort.

BUILDING OPERATIONS IN BERMONDSEY.—At Tuesday's sitting of the Borough Council plans were approved for the erection of six two-story flats at Willow-street on the application of Mr. J. Harman, for an extension of the bakery of Messrs. Spillers & Banks, and for the erection of a one-story shop in Lynton-road on behalf of Mr. T. Sloman.—It was decided to repave a portion of the Southwark Park-road with 3-in. by 6-in. Kirkcudbright pitchings on 9-in. concrete, at an estimated cost of 760*l.*—The Borough Surveyor submitted an estimate for the laying out of St. Mary's (Rotherhithe) Churchyard as a recreation-ground, which included tarpaving and providing stoneware edging, dwarf railings and soak-away gullies to paths, rearranging head-stones, levelling beds, providing trees, shrubs, and grass, repairing and repointing boundary wall, painting gates and railings, providing caretaker's shelter, notice boards, and paper baskets, but did not include seats. The estimate, which amounted to 500*l.*, was approved.

CONTRACTORS *v.* DIRECT LABOUR.—Considerable discussion took place on Tuesday at the sitting of the Bermondsey Borough Council as to whether the work of repaving portions of Tower Bridge-road and Riley-street should be given out to contract or carried out by direct labour. Tenders had been invited for the work, and seven were received, of which those of Messrs. Griffith & Co. were the lowest, viz., 1,397*l.* 6s. 2d. for Tower Bridge-road, and 242*l.* 16s. 2d. for Riley-street. As against these the Surveyor submitted estimates of 1,398*l.* 18s. 8d. and 252*l.* 19s. 8d. respectively. The discussion was chiefly based on the point that by carrying the work out by direct labour a larger share of work would be given to the unemployed residents, and it was agreed ultimately to put the work in the hands of the Borough Surveyor.

METROPOLITAN ASYLUMS BOARD.—At the fortnightly sitting of this Board on Saturday last week it was decided to forward to the Local Government Board a revised plan of proposed stable buildings at the new central stores.

NORTH OF ENGLAND COTTAGE EXHIBITION.—At a recent meeting of the Committee of the North of England Cottage Exhibition, which is to be held this year at Walker, under the auspices of the National Housing Reform Council, it was reported that there were now ninety-nine entries for the exhibition. A gratifying feature was that no less than thirty-three workmen were building houses themselves.

VENTILATION OF THE NEW SESSIONS HOUSE.—At the new Sessions House, on the 27th ult., the Lord Mayor presided over an adjourned conference to discuss the subject of the ventilation of that building. The chief complaints concerned the condition of the offices in the occupation of the legal and official staff, and it was argued that if the new system of ventilation, which cost some 8,000*l.* to instal, were entirely cut off from the offices a great benefit would result. It appears that at present the system is in operation all the year round, although the courts sit on an average only 105 days. After a long discussion, the City Lands Committee, who have the control of the building, promised to use their best endeavours to bring about an improvement. This, it is expected, says the *Telegraph*, will take the form of the entire separation of the administrative and other offices from the courts, rendering it possible for more control to be exercised over the ventilation. It is proposed to drive the apparatus for the offices by eight electric motors, but no change will be made in this respect in connexion with the courts, at least for the present. The alterations, it is anticipated, will cost several hundred pounds.

BELFAST BUILDERS' ASSOCIATION.—The annual general meeting of the members of this Association was held on the 28th ult. at 14, Arthur-street, Belfast. The Vice-President, Mr. Robert B. Henry, J.P., presided. The annual report of the Committee, which was unanimously adopted, contained the following:—"Your Committee, in again presenting their annual report, desire to state that the business completed in the past year will bear favourable comparison with that of preceding years. Unfortunately, the building trade is still suffering from serious depression, and the long-looked-for improvement has not yet been realised. Locally the past year calls for special reference as to the terms of labour. Notices were served on the various trades for a revision of rules, which included a reduction in wages. A compromise was arrived at with the four societies, namely, bricklayers, carpenters, plasterers, and stonecutters, the distance radius being fixed at six miles from the new City Hall. The rate of wages will remain as formerly for the next three years. The state of trade certainly warranted the reduction in wages, but it is hoped that an improvement will take place during the period arranged with the trade societies. A most important request, which received careful consideration, was made by the combined societies (representing bricklayers, carpenters, and stonecutters) anent reduction in the working hours during the winter months. Particulars of demands were furnished to each member, and the unanimous decision was that the subject could not for the present be entertained. During the past year your Association became affiliated with the National Federation of Building Trade Employers of Great Britain and Ireland, with the result that your Committee is kept informed of the general conditions prevailing in the building trade. Since the last annual report was submitted your Sub-Committee have had a conference with the Ulster Society of Architects regarding the subject of municipal trading, in which our Corporation has been taking such an active part. The action to be taken in regard to this matter is being considered. In regard to the Ulster Society of Architects, it is earnestly hoped that a conciliatory movement may be made whereby the members may be encouraged to adopt the conditions of contract similar to those in existence in England generally. Your Committee are pleased to report that nothing has occurred to disturb the friendly relationship which has existed for years between the Society of Architects and this Association. The roll of membership has been somewhat reduced from last year by death and other causes." The election of office-bearers resulted as follows:—President, Mr. John Martin, J.P.; Vice-President, Mr. Robert B. Henry, J.P.; Committee—Messrs. W. J. Campbell, John P. Corry, John Courtney, H. Keith, James Lees, W. H. M'Laughlin, J.P., John Smith, S. B. Thompson; Ulster representative on Council of National Federation of Builders, Mr. R. B. Henry, J.P.

LONDON COUNTY COUNCIL SCHOOL OF BUILDING.—It was reported to the Education Committee of the London County Council on Wednesday that on December 4 twenty of the principal members of the Master Builders' Association visited the School of Building, and at the conclusion of the visit the President, Mr. F. L. Dove, expressed the greatest appreciation of the practical and thorough nature of the work done, and regretted that it was not possible to insist that every craftsman in London should have a training at the school. The Committee state that the school will probably be officially recognised by the Master Builders' Association.

PLENUM WARMING AND VENTILATING SYSTEM FOR SCHOOL BUILDINGS.—On Wednesday the Education Committee of the London County Council reported having considered complaints in regard to the working of the machinery provided in certain schools in the East-end of London for the purpose of warming and ventilating the buildings on the Plenum or propulsion system. The system was installed in nine schools by the late school authority. While expressing the opinion that the Plenum system is the most scientific method of combined warming and ventilation of public buildings, they hesitated to recommend its general adoption in the Council's schools. The grounds on which the Committee base this view appear to be chiefly the difficulty of getting those in charge of the schools to take an attitude towards the system which is helpful.

THE DUBLIN MUSEUM.—In order to bring students into closer touch with this Museum, the Director, Count Plunkett, is offering prizes for drawings from objects in the collection to students of the Dublin Metropolitan School of Art. The competing work is to be done between April 1 next and April 1, 1909. It is an excellent move, and we hope will have the desired result.

Legal.

BRIGHTON NUISANCE CASE.

MR. JUSTICE JOYCE in the Chancery Division on the 29th ult. concluded the hearing of the case of Heath and others *v.* the Brighton Corporation, an action by the plaintiffs, the incumbent and the trustees of the Church of St. Mary and Mary Magdalen, Brighton, for an injunction to restrain the defendants from so using the machinery for the purpose of generating electricity as to cause a nuisance and annoyance to the plaintiffs.

It appeared that the church was erected in the year 1862, and was duly licenced for the performance of divine service by the minister of the district according to the rights and usages of the Church of England. Buildings used in connexion with Sunday-schools, classes, and a working-men's club were annexed to the church, which was capable of holding about 300 people. In 1891 the defendants under their Electric Lighting Order, 1883, erected in close proximity to the church a quantity of machinery for the purpose of generating electricity, and in 1905, for the purposes of their tramway and electric lighting system, erected a new generating station at Southwick, and connected it with their existing works, which were then extended for the purposes of transforming and transmitting currents of electricity. The plaintiffs' case was that in consequence of this extension of the works the defendants had since March, 1906, caused, and were still causing, a nuisance to the plaintiffs by noise. It was said that the congregation were inconvenienced and disturbed in the church, and that great annoyance was caused in the adjoining buildings, where classes and meetings were held. The defendants denied that they were causing a nuisance to the plaintiffs. They further said that the machinery they used was of the best and most smoothly-working modern type, and was properly housed in a building specially designed and suitable for the purpose, and that in most parts of the church it was impossible to hear any sound at all from the works, and in other parts of the church and classrooms any sound from the works amounted at most to a faint hum or buzz which could only be detected in the absence of all other noise, and did not at any time amount to a nuisance. Defendants also by way of defence relied upon their statutory powers, and also on the fact that they as a public authority were exercising such powers in relation to the public supply of electricity in a reasonable and proper manner, and according to the best and most approved methods.

Mr. Hughes, K.C., and Mr. R. C. Glen appeared for the plaintiffs; and Mr. Astbury, K.C., Mr. Younger, K.C., and Mr. Sargant for the defendants.

The Rev. Mr. Heath, one of the plaintiffs, gave evidence to the effect that the noise from the machinery interfered with the conduct of public worship, and also in the classrooms connected with the church building. Sometimes, he said, the noise from the electrical works could be heard above the organ and choir.

Professor C. A. Carus-Wilson also gave evidence as to having inspected the church and Corporation works at Brighton in June and July last. He supported the plaintiffs' claim as to the noise which the electrical works created.

At the close of the plaintiffs' case Mr. Astbury on behalf of the defendants contended that they had exercised their statutory powers in the most reasonable manner, and had done everything possible to meet the plaintiffs. It was utterly impossible to detect any noise unless one knew that it existed and specially listened for it.

Mr. Jas. Swinburne, examined, said in April last he inspected the station, which was then working at its maximum load for the time of year. The station contained four rotary transformers, among other plant, and they were of the best type, of modern design, and there was no looseness or vibration to be found in them. All machines of that class made some humming or singing noise. The rotary transformers were well designed and well made, and were on proper foundations. The noise was quite audible in the station, and could be heard outside, but the hum was not serious and not more than was generally made by a converting station. He went over the church at Brighton and listened carefully at different places. A slight noise was certainly audible at different places in the church when all was otherwise quiet. It varied from place to place, but nowhere was the noise such as to be a nuisance. The noise was completely drowned by anyone speaking or by anyone passing in the street below.

Cross-examined: He did not think that fog would make any difference in the conduction of sound, but wind would make a great difference. He did not know that anything had been done to the roof of the converter-house to render it less transmittive of sound. Deadening materials, such as felt, applied to walls and roof might effect considerable reduction if the sound was air-carried. The sound was probably air and earth-carried, but chiefly by the ground. It was exceedingly difficult to theorise about it.

Mr. Arthur Wright, Consulting Engineer to the Brighton Corporation, stated that in his opinion the hum that was heard in the church did not amount to a nuisance.

Professor Boys, examined, said he had made a special study of acoustics. He visited the church on June 3 last, and could only detect a very slight sound in the chancel. It could not be called a disturbing nuisance. By pressing his forehead hard against the masonry of the church he could detect a faint vibration. If it came through the earth it could be reduced by an elastic support under the machine. If it was air-borne, enclosing the machinery might lessen the noise.

Mr. John Christie, electrical and mechanical engineer, and manager of the Brighton Corporation electrical undertaking, stated that the machines installed in the converter-house were as silent running as it was possible to get such machines. He detailed the steps the Corporation had already taken to meet Mr. Heath's complaint.

Mr. Talbot, Town Clerk of Brighton, said that the Corporation had made every effort to stop any noise that might be heard in the church.

Professor Boys, recalled, said he believed the noise was a ground sound, and suggested that they should place the church columns on elastic supports. That might afford a remedy, but he could not guarantee it was an absolute cure.

Mr. Astbury, in summing up the case on behalf of the Corporation, contended that it was clearly established that no legal nuisance existed. It was impossible to deal with the case seriously. If the Corporation lost the case hundreds of blackmailing actions would be brought against them. If plaintiffs agreed to the action being dismissed the Corporation would not press for costs.

Mr. Hughes having replied on behalf of the plaintiffs, his Lordship reserved judgment.

WORKHOUSE WATER SUPPLY.

THE case of the Chester Waterworks Company *v.* the Guardians of the Chester Union this week came before the Court of Appeal, consisting of Lords Justices Vaughan Williams, Farwell, and Kennedy, on the defendants' appeal from a judgment of Mr. Justice Jelf in the King's Bench Division.

The case raised an important question as to the right of the defendants to have water supplied to their workhouse at the ordinary rates for water for domestic purposes.

The action was brought by the plaintiffs (1) for a declaration that on the true interpretation of the plaintiff company's statutes the defendants were not entitled to require the plaintiffs to supply, and the plaintiffs were not bound to supply, the Chester Workhouse with water otherwise than by meter or special arrangement; (2) to recover 491*l.* 11s. 9d. on account of water supplied to the workhouse from January 1, 1902, to the date of the writ, July 6, 1904.

It appeared that by the Chester Waterworks Act, 1857, the water company were bound, upon the application of any person entitled to demand a supply of water for domestic purposes, to supply water for such purposes at rates per cent. varying with the annual value of the dwelling-house, and the company were bound to supply any person with water for other than domestic purposes at such rate as might be agreed upon or determined by the two parties. By sect. 22 of the Chester Waterworks Act, 1874, "No person shall be entitled to require nor shall the company be bound to supply any dwelling-house with water (otherwise than by meter or by special arrangement) where any part of such dwelling-house is used for any trade or business purposes for which water is required." At the Chester Workhouse the purposes for which the water was required were, amongst other things, for two boilers for purposes of power to engines for a ventilating fan in the kitchen, for a drying fan in the laundry, for wringer and washing machines, and for rain-water pumping; for watering pigs and washing piggeries, the pigs being kept primarily to consume refuse, but being fed and sold when fattened; for engines used for heating purposes and chopping wood, the wood being sold; for watering the garden; and for flushing, drinking, and sanitary purposes. Mr. Justice Jelf held that the workhouse was a "dwelling-house" within the meaning of sect. 22 of the Act of 1874; that part, if not the whole, of the dwelling-house was used for business purposes within the meaning of the section; and that therefore the section applied, and the plaintiffs were not bound to supply the workhouse with water otherwise than by meter or by special agreement. On the second cause of action for arrears his Lordship gave judgment for the defendants; but he gave the plaintiffs the costs of the whole action. Hence the present appeal of the defendants.

Mr. Danckwerts, K.C., Mr. Montague Lush, K.C., and Mr. Ellis Griffiths appeared for the appellants; and Mr. Balfour Browne, K.C., and Mr. Randolph for the respondents, on the appeal.

Mr. Danckwerts contended that none of the purposes for which the water was used by the defendants were trade or business purposes, and that therefore sect. 22 of the Act did not apply. He said he thought water companies were short-sighted for taking the objection that water for a swimming-bath in a boys' school was not for a domestic purpose. As a rule, to give each boy a separate bath in the school would cause much more water to be used than it would if the boys all used a swimming-bath. He submitted that the meaning of the words "trade or business" in the section must depend upon the fact that they were used in connexion with each other. But the word "business" was a word which applied to anything. Take, for instance, the business of the Court of Appeal; that could not be considered the sort of business that was intended. In a private house the cook's business was to prepare dinner, and that could not be the sort of business that was intended. It was clear that some sort of limitation must be put upon the word "business." He contended that when the word "business" was put into the section it was meant to mean something like "trade" and something which was carried on for the purposes of gain.

Lord Justice Vaughan Williams said he thought the word "business" in the section meant something *ejusdem generis* with trade.

The learned counsel, continuing, contended that the words "trade or business" in sect. 22 of the Act meant "commercial" trade or business as distinguished from "domestic." He also submitted that Mr. Justice Jelf should not in the circumstances have ordered the defendants to pay the whole of the costs of the action.

Mr. Balfour Browne said he would not ask on behalf of the respondents that that part of the order of the learned judge should be supported by this Court. He would agree that the appellants should have the costs of the issue upon which they had succeeded at the trial.

Mr. Lush followed on the same side.

Mr. Randolph having supported the judgment of Mr. Justice Jelf on behalf of the respondents,

Lord Justice Vaughan Williams, in giving judgment, said he did not think that sect. 22 of the 1874 Act applied to the present case at all. Although the defendants might use, and did use, water for non-domestic purposes, it was not true to say that they used any part of the workhouse for any trade or business purposes for which water was required. He thought the defendants used the workhouse for the performance of their statutory duties. He was strongly of opinion that it was untrue to say that the Guardians carried on any business in the workhouse. But the question whether any business was carried on there was different. He thought the defendants had a right under the Act to two separate supplies of water, one for domestic purposes and the other for non-domestic purposes, and it was their duty to pay for the first at the ordinary rate and for the second at such rate and upon such terms as might be agreed upon, or determined by justices. Defendants, however, had not made any provision for the segregation of the two supplies, and had not complied with the provisions of sect. 47 of the Act of 1857. He thought the declaration should be that sect. 22 of the Act of 1874 did not apply, and that the defendants should be entitled to the two supplies of water when they had complied with the provisions of sect. 47 of the Act of 1857, and when such alterations had been made as would segregate the two supplies.

Lords Justices Farwell and Kennedy concurred.

No costs of the appeal were given.

DAMAGE BY WOOD-PAVING BLOCKS.

THE case of West *v.* the Bristol Tramways Company, Ltd., came before a Divisional Court of King's Bench, consisting of Justices Phillimore and Walton, on the 4th inst., on the

defendants' appeal from a judgment of the Recorder of Bristol, who entered judgment for the plaintiff upon the findings of the jury in the action.

In this case the plaintiff, a market gardener, brought the action against the defendants to recover damages for injury alleged to have been caused to plants and shrubs belonging to the plaintiff owing to the use by the defendants, for paving purposes, of wooden blocks coated with creosote which the defendants had laid upon a road adjoining plaintiff's premises, and from which the plaintiff alleged that particles or gaseous fumes escaped on to his land. The defence was a denial that the damage alleged was done by the creosote, and that the defendants were protected by their Special Act, the Bristol Tramways Act, 1894. At the trial the jury found that the injury to the plants was caused by the wood paving used by the defendants; that it was not absolutely necessary for defendants to pave the road as they did at the time they did it; and that it was reasonably necessary for the defendants to repave the road in the way they did, and at the time they did according to the knowledge of the defendants at the time, but that in the light of the evidence given at the hearing, it was not reasonably necessary. Upon these findings the Recorder entered judgment for the plaintiff. Hence the present appeal of the defendants, upon whose behalf Mr. Clavell Salter, K.C., submitted that they were entitled to use blocks coated with creosote, and were not liable for injury to the plaintiff which might have resulted as a consequence.

In the result, their Lordships, without calling upon Mr. Inskipp for the respondent, held that the Recorder had properly entered judgment for him on the findings of the jury, and dismissed the appeal with costs.

A CONTRACT QUESTION.

On the 27th ult. Judge Parry in the Manchester County Court heard an action brought by Messrs. Robert Neill & Sons, builders, of Strangeways, to recover 12*l.* 1s. 2d. for work done and materials supplied to Messrs. H. H. Martyn & Co., Ltd., architectural sculptors, of Cheltenham. Mr. Jordan appeared for the plaintiffs, and Mr. E. H. C. Wethered for the defendants.

Mr. Jordan said the work was in connexion with the building of new municipal schools at South Shields. Messrs. Neill had secured the contract for 47,900*l.*, and among other subcontracts was the one for ornamental stone-carving secured by the defendants. The question at issue was whether certain work done by Messrs. Neill for Messrs. Martyn was or was not included in the original contract. The plaintiffs contended that it had been done at the defendants' own request, and ought to be paid for separately by them. It consisted of sharpening tools, the use of a steam crane, making "bankers," and erecting sheds for the carvers to work under.

Mr. Wethered pointed out that in the tender the work charged for was expressly said to be builders' work. His clients were stone-carvers, not builders. Messrs. Neill had sent to the South Shields Corporation the same bill that they were now suing the defendants for.

James Webb, manager for Messrs. Neill, was the only witness called. He asserted that the work claimed for was never included in original contracts unless it was specified in them. All that the builders were expected to do was to leave the stone on the ground. It could have been carved in the open air.

Judge Parry: In your contract you agreed to give "facilities to all other trades." It seems to me all these items claimed for are facilities.

Witness: We are not expected to erect sheds and raise the stone on to "bankers."

His Honour: The contract says you are to leave the stone in position ready for the carver. If you want your dinner ready it means that it is to be put on the table for you. You don't want it left down in the kitchen. There will be judgment for the defendants, with costs.—*Manchester Guardian.*

Patents of the Week.

APPLICATIONS PUBLISHED.*

205 of 1907.—D. M. Kenyon and J. B. Etherington: *Pipe Couplings.*

This relates to couplings for gas, water, or steam pipes, in which an inclined wedge-like or taper packing ring or rings of suitable material are enclosed within a shell or cylinder, and fitted to inclined surfaces therein, and around the ends of the pipes to be coupled, and consists in interposing in the space between the outer wall of the pipe and the inner wall of the coupling an annular ring of yielding packing, which before compression is sufficiently thicker than the width of said space to prevent the assembling of the members of the coupling solely by the insertion of the pipe within the coupling, without the use of inserting tools.

1,776 of 1907.—J. Cornes and W. Haighton: *Combined Sinks or Washing Basins and Coppers.*

This relates to an installation, comprising a boiler and a sink or basin hinged or pivoted to the back or sides of said boiler, said sink being provided with a drainer with pockets and with a gutter or channel for the purpose of carrying away water when said sink or basin is emptied through a standing waste-pipe.

2,404 of 1907.—J. Bradshaw: *Slidable Sash Frames of Windows.*

This relates to slidable window sashes, capable of being turned about a horizontal axis, and comprises means of suspension, consisting of tubes passed through and secured to the sash frame at each side, bolts passed through the tubes provided with nuts at their inner ends, and links or hooks coupled to the bolts and to the weighted sash cords, and sash-cord pulleys mounted on a pin carried by a bracket secured by a screw and nut to the top horizontal member of the window-box frame, and in the interior of the latter.

5,245 of 1907.—W. S. Hubbard: *Safety or Retarding Apparatus Applicable to Jib Cranes, and the like.*

This relates to a safety or retarding device or apparatus applicable to the worm shaft of jib cranes or the like, characterised by a loose ratchet friction ring held between the loaded end of the worm on one side, and a toothed washer on the other side, which rotates with and is keyed to the shaft and gears with a gear-wheel, having a boss carrying a pivoted pawl on the boss of the gear-wheel, and the gear wheel with its boss and pawl being loosely mounted and fitted round a stud pin in such manner that when the worm is rotated in the direction for lowering the jib, the pawl, being entirely carried on the boss of the gear-wheel, is moved to abut into the loose ratchet friction ring, and so retard the rotation of the worm, but when the worm is rotated in the opposite direction for raising the jib, the pawl is carried out of action and remains against a stop.

6,435 of 1907.—Evered & Co., Ltd., and S. Evered: *Combined Spring-hinges and Checks for Swing-doors.*

This relates to floor spring hinges for swing-doors, that is to say, spring-hinges of the class in which the mechanism of the spring-hinge is enclosed in a box or casing let into the sill or framing, the said mechanism acting upon the door through the medium of the hinge pin or spindle and shoe, and in which a hydraulic closing check is combined with the said floor spring-hinge, and consists in making the hydraulic chamber for the check mechanism in one with the floor box or casing of the floor spring-hinge, the said hydraulic chamber being horizontal and parallel with the said floor box, the said horizontal hydraulic chamber being larger at one end than at its other or cylinder end, in which cylinder or smaller end the piston works when the door is opened and closed.

13,832 of 1907.—N. C. Ahl, C. Jorgenson, and A. C. Herskind: *Cold and Hot-water Taps for Baths.*

This relates to cold and hot-water taps of the kind in which two spring-controlled slide valves which regulate the supply of cold and hot water to the interior of the tap are operated by an eccentric on which the said slide valves bear by means of rollers arranged on the free ends of rods carried by the valves, and consists in the suspension of the said ends of the valve rods by means of links.

18,701 of 1907.—F. J. Muirhead: *Means for Raising and Lowering Ladders Employed as Fire-escapes, and for other purposes.*

This relates to a ladder hoist, comprising a pivotally-mounted base plate, uprights fixed to said base plate, a fixed shaft in said uprights, plates mounted on said shaft and having spur teeth, a ladder secured to said plates, a pair of fixed shafts in the uprights, discs mounted on said pair of shafts having teeth for engagement with the teeth of said plates, and having worm teeth, worm shafts carried by the uprights and having worms for engagement with the worm teeth of said discs, and having bevelled gears at their ends, a spring motor having the shaft thereof provided with bevelled gears meshing with the bevelled gears of said worm shafts, and a brake mechanism for said spring motor.

19,225 of 1907.—M. Selders: *Discharge Device for Lavatory Basins.*

This consists in the combination with the waste-pipe of a wash-bowl of a flat disc-like closure therefor disposed in a horizontal plane, and having on opposite sides pintles that project through the pipe to permit swivel movements of the closure, one of the pintles being provided with a finger hold, a non-oxidisable annulus combined with the disc, and of a size to impinge closely against the inner walls of the pipe, and stops diagonally arranged on the pipe with which the closure engages to limit its movement.

22,474 of 1907.—A. Elsing: *Arrangement for Guiding the Load-supporting Rope in Cranes or Lifting Devices.*

This relates to means for guiding the load-supporting rope in cranes, wherein the rope or the hook or a member interposed between the same is so connected with the frame of the crane by an extensible rigid link that turning or twisting of the rope is prevented while the rope retains its freedom of movement in all directions.

23,619 of 1907.—W. Smith, R. L. Smith, C. S. Walker, and E. R. Smith: *Tiles or Slabs for Use in Building Fire-resisting Floors, Walls, Partitions, and the like.*

This relates to a fire-resisting tile or slab for floor construction, having longitudinal inclined horns and lateral ribs, and are secured to the supporting bars by means of wires embedded in and projecting from the tiles or slabs, so as to temporarily secure the tiles in position during the time the concrete filling is setting, after which the tile and filling are keyed together and become homogeneous with the supporting bars.

24,936 of 1907.—D. P. Jones: *Contrivances or Devices for Binding or Connecting Together Scaffold-poles, Ladders, Timbers, and the like.*

This relates to contrivances or devices for binding or connecting together scaffold-poles, ladders, timbers, and the like, and consists in providing two chains to be passed around the members to be connected together, and connecting the two ends of each chain to a tension plate bearing against a nut upon a screwed shaft, the end of which latter bears against one of said members, whereby the chains are simultaneously tightened by turning said nut.

8,964 of 1907.— W. Cassels: *Urinals.*

This relates to a urinal formed of concave glazed fireclay slabs built into a brick wall forming an integral part thereof, and taking the place of a thickness of brick.

*All these applications are in the stage in which opposition to the grant of patents upon them can be made.

PUBLISHER'S NOTICES.

Nat. Tel., 6112 Gerrard. Telegrams, "The Builder, London."

THE INDEX (with TITLE-PAGE) for VOLUME XCIII. (July to December, 1907) was given as a supplement with the Number for January 11, 1908.

CLOTH CASES for Binding the Numbers are now ready, price 2s. 6d. each; also

READING CASES (Cloth), with Strings price 9d. each,

THE NINETY-THIRD VOLUME of "The Builder" (bound), price Twelve Shillings and Sixpence

SUBSCRIBERS' VOLUMES, on being sent to the Office, will be bound at a cost of 3s. 6d. each.

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*** Stamps *must not* be sent, but all sums should be remitted by Postal Orders, payable to J. MORGAN, and addressed to the Publisher of "THE BUILDER," 4, Catherine Street, W.C.

Advertisements for the current week's issue are received up to ONE p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after TWELVE NOON on that day. Those intended for the Outside Wrapper should be in by TWELVE NOON on WEDNESDAY.

ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before TEN o'clock on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, etc., left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

ADVERTISERS in "THE BUILDER" may have *Replies addressed to the* OFFICE, 4, CATHERINE ST., STRAND, W.C., *free of charge.* Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage. Unused stamps are returned to advertisers the week after publication.

N.B.—The Reply Boxes are not intended for trade lists, circulars, and the like; should these be received, they cannot (if noticed) be forwarded.

AN EDITION Printed on THIN PAPER, for FOREIGN and COLONIAL CIRCULATION, is issued every week.

READING CASES { NINEPENCE EACH. By post (carefully packed) 1s.

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competitions, iv.; Contracts, iv. vi. viii. x.; Public Appointments, xvii*a*; Auction Sales, xxviii.

Certain conditions, beyond those given in the following information, are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bonâ-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

***** It must be understood that the following paragraphs are printed as news, and not as advertisements: and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.**

Competitions.

FEBRUARY 12.—**Bacup.**—SCHOOL.—Bacup Education Committee are contemplating the erection of an elementary day school, to be called the Northern School, in Burnley-road, Bacup, and are about to invite competitive designs therefor. Premiums of 20*l*., 10*l*., and 5*l*. will be given. Forward to the Secretary of the Education Committee, Rochdale-road, Bacup, in envelopes endorsed "Northern School," names, addresses, a list of works of similar nature carried out, and the terms for undertaking the school if engaged for that purpose.

FEBRUARY 26.—**Gorseinon.**—REBUILDING EBENEZER.—The Committee responsible for rebuilding Ebenezer, Gorseinon, are prepared to offer 5*l*. 5s. for the best plan of a chapel of 650 sittings, not to exceed 2,000*l*. Tenderers are requested to send also their charges for making out specifications and bills of quantities for their respective plans. The present chapel and site may be seen on application to Rev. D. H. Thomas, Gorseinon.

NO DATE.—**Fishponds, Bristol.**—SCHOOL.—Bristol Education Committee invite designs for a new school, to accommodate 600 children, at Alexandra Park, Fishponds. The competition will be restricted to Bristol architects. A plan of the site, etc., from Mr. Wm. Avery Adams, Secretary, Guildhall, Bristol.

Contracts.

BUILDING.

FEBRUARY 8-MARCH 7.—**Bude.**—SCHOOL.—Cornwall Education Committee invite tenders for the erection and completion of a county school at Bude. Plans and specifications have been prepared by the architects, Messrs. Rogers, Bone, & Coles, 7, Carteret-street, Westminster, London, S.W. Copies, &c., may be obtained from them.

FEBRUARY 8-22.—**Milford.**—BUILDINGS IN BURIAL-GROUND.—The P.C. of Witley invite tenders for the erection of certain buildings on the new burial-ground for Milford. Written application must be made for plans, etc., Mr. H. Bowles, Clerk, School House, Witley.

FEBRUARY 8.—**St. Annes-on-Sea.**—RESIDENCE.—A new residence at St. Annes-on-the-Sea. Apply to Mr. Herbert Wade, architect, 27, Birley-street, Blackpool.

FEBRUARY 10.—**Aberlour.**—ORHANAGE ADDITION.—Mason, carpenter, slater, plaster, plumber, glazier, and painter works of "The Lord Mountstephen Wing," Aberlour Orphanage. Plans, etc., may be seen with the Warden, at the Orphanage. Schedules of quantities may be obtained from the architects, Messrs. Alexander Ross & Son, Queensgate-chambers, Inverness.

FEBRUARY 10.—**Ashton-in-Makerfield.**—SCHOOL BUILDINGS.—The Governors of Ashton-in-Makerfield Grammar School invite tenders for the erection of a dining-room and covered play-shed, at the Grammar School, Ashton-in-Makerfield. Particulars may be obtained, on deposit of 10s. 6d., on application to the Architect, Mr. Frank Rose, Council Offices, Ashton-in-Makerfield.

FEBRUARY 10-25.—**Cramlington.**—SCHOOL.—Northumberland Education Committee invite tenders for the work of erecting a new Council school to accommodate 680 scholars, and caretaker's dwelling-house, at Cramlington. Name and address to Mr. C. Williams, Secretary to the Education Committee, Pearl-buildings, Newcastle-on-Tyne, together with a deposit of 2*l*. 2s. Plans of the work may be inspected at the office of Mr. Karl B Spurgin, architect, 4, New Bridge-street, Newcastle-on-Tyne.

FEBRUARY 10.—**Monaghan.**—WORKHOUSE ALTERATIONS.—The Guardians invite tenders for alterations and repairs in the idiot wards. Specification can be seen at the Board-room, Workhouse.

FEBRUARY 10.—**Neath.**—GOODS SHED PLATFORM.—Great Western Railway Directors invite tenders for the extension of the goods shed platform and other works at Neath. Plans, etc., may be seen, and forms of tender, etc., obtained, at the office of the Divisional Engineer at Neath Station.

FEBRUARY 10.—**Sheffield.**—ENGINEERING WORKSHOPS.—The University of Sheffield, Department of Applied Science, invite tenders for the whole of the work, except steelwork, also separate tenders for steelwork, required in the extension to engineering workshop, Abney-street. Plans, etc., may be seen, and bills of quantities obtained, on application at office of Messrs. Gibbs & Flockton, architects, 15, St. James's-row, Sheffield.

FEBRUARY 10.—**Shrewsbury.**—PAVILION.—The Committee of the Old Shrewsbury Bowling Club invite estimates for the erection of a new pavilion, situated at Victoria-avenue, Severnside, Shrewsbury. Names to Messrs. Dickens-Lewis & Haymes, architects, Talbot-chambers, Shrewsbury, together with a cheque for 2*l*. 2s.

FEBRUARY 11.—**Llwynypia.**—STOREROOMS.—Pontypridd Guardians invite tenders for the erection of storerooms at Llwynypia Workhouse. Plans, etc., can be seen at the offices of Messrs. A. O. Evans, Williams, & Evans, architects, Post Office-chambers, Pontypridd.

FEBRUARY 12.—**Carlisle.**—WESLEYAN CHURCH.—The erection and full completion of Wesleyan church, Lowther-street, Carlisle. Names to the office of Mr. Matthew Johnstone, architect and surveyor, 22, Lowther-street, Carlisle, together with a deposit of 10s. 6d.

FEBRUARY 12.—**Northallerton.**—SCHOOL.—North Riding of Yorkshire C.C. Education Committee invite tenders for the erection of the Elementary School, providing accommodation for about 400 places. Names and addresses to the offices of the architects, Messrs. J. M. Bottomley, Son, & Wellburn, 28 and 30, Albert-road, Middlesbrough, and 13, Bond-street, Leeds.

FEBRUARY 12.—**Pentre.**—ALTERATIONS TO PREMISES.—Alterations and additions to business premises at 196 and 197, Ystrad-road, Pentre, for Messrs. Hodges & Sons, outfitters, Aberdare. Plans, etc., may be seen at office of Mr. T. E. Richards, A.R.I.B.A., architect, Pontypridd.

FEBRUARY 12.—**Pontycymmer and Hengoed.**—SCHOOLS.—Glamorgan C.C. are desirous of contracting for the following works, viz.: (1) Erection of a new higher elementary school at Pontycymmer; (2) additions to the Council school at Hengoed. Plans, etc., of No. 1 may be seen, and copies of the bills of quantities obtained, at the Pontycymmer Police-station. Plans, etc., of work No. 2 may be seen at the Hengoed Police-station. The plans may also be seen or obtained at offices of Mr. T. Mansel Franklen, Clerk of the Glamorgan C.C., Glamorgan County Offices, Westgate-street, Cardiff.

FEBRUARY 13.—**King's Lynn.**—MOTOR GARAGE.—The erection and completion of a motor garage at the Globe Hotel, King's Lynn. Plans, etc., can be seen, and quantities, etc., obtained, at the offices of Mr. Louis F. Eagleton, architect, King-street, King's Lynn.

FEBRUARY 13.—**Morley.**—CHIMNEY.—The erection of a tall brick chimney, at the Bakery, Baker-street, Morley, for Messrs. Metcalf & Bradshaw. Plans, etc., may be seen, and quantities obtained, at Morley offices of Mr. T. A. Buttery, F.I.A.S., architect, Queen-street, Morley, and 1, Basinghall-square, Leeds.

FEBRUARY 13.—**Prudhoe.**—SHOPS AND HOUSES.—For building two shops and houses in Front-street, Prudhoe. Plans, etc., can be seen at the house of Mr. John Harkness, East View, Prudhoe.

FEBRUARY 14.—**Ballywalter.**—WORK AT CHURCH.—New wood ceiling, new floor, and pewing, etc., at First Presbyterian Church, Ballywalter, co. Down. Plans, etc., may be seen at office of Messrs. Young & Mackenzie, Scottish Provident-buildings, Belfast.

FEBRUARY 14.—**Cheltenham.**—SANATORIUM.—Birmingham Health Department invite tenders for erection of new sanatorium for consumptives, near Cheltenham. Names to Messrs. W. H. Ward, architects, Paradise-street, Birmingham.

FEBRUARY 14.—**Cork.**—ADDITIONS TO HOUSE.—Cork B.C. invite tenders for erection of new additions and improvements to resident engineer's house at the pumping-station, Lee-road, Cork. Drawings, etc., may be seen, and tender form, etc., obtained, at the City Engineer's Office, City Hall, Cork. Intending contractors must first lodge with the City Treasurer the sum of 1*l*. sterling.

FEBRUARY 14.—**Horwich and Westhoughton.**—SCHOOL WORKS.—Lancashire Education Committee (Horwich and Westhoughton Education Sub-Committee, No. 21) invite tenders for:—(1) Altering levels of yards, asphalting, new drains, extension of urinals, etc., at Chorley New-road Schools, Horwich; (2) taking up concrete flags, altering levels of ground, and preparing ground for new concrete floor at Infants' School, Chorley New-road, Horwich; (3) removing coloured glass and reglaze, provide new hopper ventilators, etc., at Lee-lane School, Horwich; (4) building new heating chamber, new system of heating, ventilating cloak-rooms, and building screen wall at Julia-street School, Horwich. Specifications, etc., may be obtained from Mr. H. Lloyd Snape, Director of Education, on receipt of a deposit of 10s. 6d.

FEBRUARY 14.—**Leeds.**—INSTITUTE.—The erection of Salem Congregational Institute, in Hunslet-road, Leeds. Names to Mr. George F. Danby, architect, 73, Albion-street, Leeds.

FEBRUARY 15.—**Dorchester.**—SCHOOL ALTERATIONS.—Certain alterations at the Boys' School, Colliton-street, Dorchester. Plans, etc., may be seen at the offices of the architect, Mr. J. Feacey, South Walks.

FEBRUARY 15.—**Middleton.**—BUILDINGS.—The Corporation of Middleton invite tenders for the erection of the buildings required for the housing of the ambulance and disinfecting vans. Plans may be seen, and specifications, etc., obtained, on application to Mr. Welburn, Borough Surveyor, on payment of 10s. 6d.

FEBRUARY 15.—**Swaffham.**—WORKHOUSE ALTERATIONS.—Swaffham Guardians invite tenders for carrying out alterations, etc., to the children's quarters at the Workhouse. Plans can be seen at office of Mr. Sydney Matthews, Clerk, Union Offices, Swaffham; or at the office of the architect, Mr. L. F. Eagleton, King-street, King's Lynn. Quantities, etc., can be obtained upon application to the architect.

FEBRUARY 15.—**Worle.**—SCHOOL.—Somerset C.C. Education Committee invite tenders for new infants' school at Worle, Weston-super-Mare. Drawings, etc., can be seen, and copies of bills of quantities obtained, at the offices of the architects, Messrs. Price & Jane, Waterloo-street, Weston-super-Mare.

FEBRUARY 17.—**Morley.**—ADDITION TO MILL.—Alterations and additions to mill premises, Grove Mills, Morley, for Messrs. David Bradley, Ltd. Plans, etc., may be seen, and quantities obtained, at Morley offices of Mr. T. A. Buttery, F.I.A.S., architect, Queen-street, Morley, and 1, Basinghall-square, Leeds.

FEBRUARY 17.—**Newtowngore.**—DISPENSARY, ETC.—Bawnboy Guardians invite tenders for the erection of dispensary and dispensary residence at Newtowngore. Plans, etc., prepared by Mr. O'Brien, C.E., may be inspected at office of Mr. Michael Bannon, Clerk of the Union, Clerk's Office, Board-room, Bawnboy. A deposit of 3*l*. must accompany each tender.

FEBRUARY 17.—**Pyntyla.**—RESIDENCE.—The erection of a villa residence, together with boundary walls, etc., at Pyntyla, near Ystrad Rhondda, for Mr. Aneurin Cule, Pentre. Plans, etc., can be seen, and bills of quantities obtained, at offices of Messrs. A. O. Evans, Williams, & Evans, architects, Pontypridd, on deposit of 1*l*. 1s.

FEBRUARY 18.—**Aviemore.**—MOTOR GARAGE.—The Directors of the Aviemore Station Hotel Company, Ltd., invite offers for the erection of a new motor garage and larder at their hotel at Aviemore, Inverness-shire. The plans may be seen at the hotel, and copies of the specification may be obtained from Mr. Ransome, there, or from Messrs. Baillie & Gifford, Secretaries, 12, Hill-street, Edinburgh.

FEBRUARY 18.—**Barnby Moor.**—KENNELS, ETC.—The erection and completion of new foxhound kennels, boiling-house, Meal stores, cottages, etc., at Barnby Moor, near Retford, for the Right Hon. the Earl Fitzwilliam. Names to Mr. G. A. Wilson, architect and surveyor, Hartshead-chambers, Sheffield. Bills of quantities obtained on receipt of deposit of 2*l*. 2s.

FEBRUARY 18.—**Derby.**—CAR-SHED.—The Corporation invite tenders from local builders for the erection and completion of tramway car-shed on the Nottingham-road. Plans may be seen, and specification, etc., obtained, on application at the office of Mr. John Ward, M.Inst.C.E., Borough Surveyor, Borough Surveyor's Office, Babington-lane, Derby, upon the deposit of 1*l*. 1s.

FEBRUARY 18.—**Great Cornard.**—SCHOOL.—West Suffolk Education Committee invite tenders for the erection of an elementary school to accommodate eighty children. The drawings, etc., may be inspected at the office of Mr. A. Ainsworth Hunt, M.S.A., Building Inspector to the Education Committee, Shire Hall, Bury St. Edmund's, who will supply quantities on payment of a fee of 1*l*. 1s.

* FEBRUARY 18.—**Jersey.**—NEW POST-OFFICE.—The Commissioners of H.M. Works, etc., invite tenders for Jersey new post-office. For further particulars refer to an advertisement in this issue.

FEBRUARY 18.—**Maidstone.**—PUMPING-STATION.—The Corporation of the Borough of Maidstone invite tenders for the erection and construction of pumping-station and screen-house buildings, pump and screening wells, sewers, rising mains, etc., at sewage works, at Allington. Plans, etc., may be seen, and specifications, etc., obtained, on applications and additions to the Evesham Institute buildings, Victoria-street, Westminster, London, on payment of a deposit of 3*l*. 3s. by cheque.

FEBRUARY 19.—**Edinburgh.**—EXTENSION OF LAW COURTS.—The Commissioners of H.M. Works and Public Buildings invite tenders for the extension of the Courts of Law, Edinburgh. Drawings, etc., may be seen on application at H.M. Office of Works, Parliament-square, Edinburgh. Bills of quantities, etc., may be obtained from the same office on payment of 1*l*. 1s.

* FEBRUARY 19.—**Homerton.**—CONCRETE FLOOR, ETC.—The Guardians of the Hackney Union invite tenders for providing concrete floor, foundations, etc., at Workhouse, Sidney-road, Homerton. For further particulars see advertisement in this issue.

FEBRUARY 20.—**Grangetown.**—ALTERATIONS TO SCHOOL.—North Riding of Yorkshire C.C. Education Committee invite estimate for the whole of the works required to be done in connexion with the proposed alterations at Grangetown Council School, Bolckow-road. Forms of tender, etc., at the school between the hours of 9 a.m. and 4 p.m. on school days.

FEBRUARY 20.—**Northallerton.**—ALTERATIONS TO SCHOOLS.—North Riding of Yorkshire C.C. Education Committee invite an estimate for the works required to be done in connexion with the proposed alterations at Grangetown Council school. Forms, etc., at the school.

* FEBRUARY 25.—**Evesham.**—ALTERATIONS, ETC.—The Evesham Corporation invite tenders for alterations and additions to the Evesham Institute buildings, etc. For further particulars see advertisement in this issue.

FEBRUARY 26-29. — **Cramlington.** — MORTUARY CHAPEL.—Cramlington U.D.C. invites tenders for the erection of a mortuary chapel, having seating accommodation for 120 persons. Drawings, etc., prepared by Mr. Wm. I. Coulson, Surveyor to the Council, can be seen by appointment at the Council Office, Cramlington.

* FEBRUARY 28. — **London.** — BUILDING.—The freeholder of 133 and 135, Oxford-street; 201 and 203, Wardour-street; and 53 and 54, Berwick-street, invite tenders for the erection of a block of shops and offices on the site thereof. For further particulars see advertisement in this issue.

MARCH 2. — **Belturbet, Ireland.** — ALTERING HOUSE.—For rising, altering, and improving a dwelling-house, in Chapel-road, Belturbet, in accordance with drawings and specification prepared by Mr. Thomas O'Brien, A.I.S.E. Drawings, etc., can be seen with Mr. Patrick Reilly.

* MARCH 2.—**Leominster.**—SCHOOL.—The Hertfordshire C.C. invite tenders for Secondary School at Leominster. For further particulars see advertisement in this issue.

MARCH 2. — **Stone.** — SCHOOL ADDITIONS. — The Governors of Alleyne's Grammar School, Stone, Staffordshire, invite tenders for the erection of new laboratory, class and lecture rooms, etc., in accordance with plans, etc., prepared by Mr. W. E. Rogers, architect, Rugeley, at whose office plans, etc., may be inspected, and bills of quantities obtained, on payment of a deposit of 1*l.* 1s.

NO DATE.— **Accrington.**— COTTAGES.— Twenty-four new cottages for Howard & Bullough, Ltd., in Stevenson-street, Accrington. Names to Globe Works, Accrington.

NO DATE.—**Ben Rhydding.**—RESIDENCE.—Building a residence at Ben Rhydding. Plans, etc., may be seen, and quantities obtained by post, by applying to Mr. W. H. Herbert Marten, architect, Grove-chambers, Ilkley.

NO DATE.—**Boston Spa.**—HOUSE.—The erection of a detached house at Boston Spa. Names (stating trade) to Mr. Fred Mitchell, architect and surveyor, 9, Upper Fountaine-street, Albion-street, Leeds.

NO DATE.—**Crynant.**—VILLA.—The erection of villa at Crynant for Mr. David Daniel, Crynant. Plans, etc., may be seen at the offices of Mr. J. Cook Rees, architect, Neath.

NO DATE.—**Kingswood.**—HOUSES.—The erection and completion of thirteen dwelling-houses at Kingswood. Names to Mr. A. R. F. Trew, architect, 22, Broad-street, Bristol.

NO DATE.—**Llawr-y-Bettws.**—SCHOOL.—The Welsh Campaign Committee invite tenders for building an elementary school at Llawr-y-Bettws, near Corwen. The plans, etc., may be obtained from the architects, Messrs. Deakin & Howard Jones, M.S.A., architects, Borth, R.S.O., on deposit of 1*l.* 1s.

NO DATE.— **Long Eaton.**—FACTORY.—For the erection and entire completion of a one-story lace factory, containing forty-two standings, with boiler-house, chimneyshaft, etc., in Oxford-street and Fletcher-street, Long Eaton. Application to Mr. John Shelton, architect, Darley House, Long Eaton.

ENGINEERING, IRON, AND STEEL.

FEBRUARY 10.—**Eccles.**—HEATING APPARATUS.—Eccles Corporation invite tenders for the supply and fixing of the heating apparatus required at Clarendon-road School. Drawings may be inspected, and further particulars obtained, at the office of the architect, Mr. Henry Lord, 42, Deansgate, Manchester, and a copy of the conditions, etc., may be obtained from Mr. Edwin Parkes, Town Clerk, Town Hall, Eccles, on payment of 10s.

FEBRUARY 10.—**Hull.**—ELECTRIC LIGHTING.—Hull Education Committee invite tenders for the necessary electric light installation, fittings, and fans required at the Selby-street West School, now in course of erection. Plans may be seen, and specifications obtained, at office of Mr. Joseph H. Hurst, City Architect, Town Hall, Hull.

FEBRUARY 11 and 18.—**London.**—BOILERS, SPRINGS, ETC.—The Secretary of State for India in Council is prepared to receive tenders for supply of (1) boilers, locomotive; (2) springs, bearing; (3) axles, carriage and wagon; (4) rails and fishplates; (5) fishbolts; (6) coach screws. The conditions of contract may be obtained on application to the Director-General of Stores, India Office, Whitehall, S.W.

FEBRUARY 12.—**Dublin.**—TAR BOILERS.—Dublin Paving Committee invite tenders for the supply of two new tar boilers, and the repair of five old tar boilers. Specification can be obtained on application at the office of Mr. L. J. Lawless, C.E., assistant engineer, 26, Castle-street, Dublin.

FEBRUARY 12. — **Forest Gate.** — DISINFECTING APPARATUS.—Poplar Guardians invite tenders for supplying and fitting disinfecting apparatus at their branch Workhouse, 95, Forest-lane, Forest Gate. Further particulars can be obtained on application to the Superintendent at the above address.

FEBRUARY 13.—**Edinburgh.**—ELECTRICITY SUPPLY.—Edinburgh Corporation invite tenders for the wiring, fittings, etc., for the Burgh Assessor's office, Waterloo-place. The specification, etc., can be obtained at the office of Mr. Frank A. Newington, Engineer, Electricity Supply Station, Dewar-place, Edinburgh, on payment of a deposit of 1*l.* 1s.

FEBRUARY 15. — **Blackpool.** — CYLINDERS.—Tenders are invited for a steam-jacketed fish offal cylinder, size 10 ft. by 5 ft. Full particulars can be obtained on application to Mr. James Bee, Cleansing Superintendent, 21, Birley-street, Blackpool.

FEBRUARY 15.—**Boothstown.**—HEATING.—Wesleyan Schools, Boothstown Trustees invite tenders for heating installation. Plans, etc., may be seen, and all particulars obtained, from Mr. W. J. Simpson, Boothstown.

FEBRUARY 17.—**Pendleton, Salford.**—ADDITIONAL ELECTRIC LIGHT INSTALLATION AT CENTRAL CAR DEPOT.—Salford Tramways Committee invite tenders for above at the Central Car Depôt, Frederick-road, Pendleton. Form of tender, etc., may be obtained on application to the General Manager, Tramways Department, 32, Blackfriars-street, Salford, upon depositing with him the sum of 1*l.* 1s. Plans may be seen, and further particulars obtained, at 32, Blackfriars-street.

FEBRUARY 19. — **Holbeck, Leeds.** — BRIDGE WORKS.—The concreters', masons', and bricklayers' works required in the pulling down and reconstruction of a bridge over the Hol Beck, in Globe-road, Holbeck, Leeds. The drawings, etc., may be seen at the City Engineer's Office, Municipal-buildings, and bills of quantities obtained, on deposit of 1*l.* 1s.

FEBRUARY 19.—**Holbeck, Leeds.**—GIRDERS.—The smith and founders' works required in the construction and fixing of steel girders, railings, etc., for the erection of a bridge over the Hol Beck, in Globe-road, Holbeck, Leeds. The drawings, etc., may be seen at the City Engineer's Office, Municipal-buildings, and bills of quantities obtained on deposit of 1*l.* 1s.

FEBRUARY 22. — **Ballaghaderreen.** — ELECTRIC LIGHTING.—Castlerea R.D.C., County of Roscommon, invite tenders for electric lighting scheme for the town of Ballaghaderreen. Plans may be inspected by appointment at the office of the consulting engineer, Mr. Louis J. Lawless, A.I.E.E., 27, Castlewood-avenue, Rathmines, Dublin, from whom general conditions, etc., may be obtained, on a deposit of 2*l.* Copies of plans may be obtained on a payment of 6s..

FEBRUARY 24. — **East Ham.**—GENERATING PLANT.—The Corporation of the Borough of East Ham invite tenders for the installation of an approved generating plant. Plans of the several blocks of buildings to be heated, together with descriptive specification, may be obtained on application to Mr. A. H. Campbell, M.Inst.C.E., Borough Engineer, on deposit of 1*l.* 1s.

FEBRUARY 25.—**Islington.**—ELECTRIC LIGHTING PLANT.—The Lighting Committee of the Islington B.C. invite tenders for supply and erection of machinery and plant. Specification, etc., may be obtained on application to the Electrical Engineer, 50, Eden-grove, Holloway, N. A deposit of 2*l.* 2s. will be required.

MAY 1.—**Quebec.** CRANE.—Quebec Harbour Commissioners of Quebec, Canada, invite tenders for the supply of a 30-ton capacity floating crane, particulars of which may be had from the Commissioners' Chief Engineer, Mr. St. Geo. Boswell.

MISCELLANEOUS.

FEBRUARY 10.—**Fylde.**—RAILING.—Fylde Guardians invite tenders for about 700 yds. of unclimbable wrought-iron railing. Mr. Fred. H. Brown, Clerk to the Guardians, Union Offices, Kirkham.

FEBRUARY 10.—**Liskeard.**—CARTING.—Liskeard T.C. invite separate tenders for:—(1) At per cubic yard, for loading and carting out about 750 yds. of road-stone; (2) at per day, for the supply of a horse, cart, and driver, for the removal of waysoil; (3) at per cubic yard, for hauling about 100 yds. of gravel. The conditions can be obtained from the Borough Surveyor.

FEBRUARY 10. — **Liskeard.**—SCAVENGING.—Liskeard T.C. invite tenders for the collection and disposal of house and street refuse. The conditions can be seen on application to the Borough Surveyor.

FEBRUARY 10. — **West Ham.** — REPAIR OF TOOLS.—West Ham Education Committee invite tenders from firms in the Borough for the repair and grinding of tools used in the fourteen woodwork centres under their control. Full particulars, etc., can be obtained on application at the Education Office, 95, The Grove, Stratford, E.

FEBRUARY 11. — **Glanford Brigg.** — FENCING.—The R.D.C. of Glanford Brigg invite tenders for about 300 yds. of wood fencing round the filter beds at Ashby. A specification may be seen at the office of Mr. Bainton, 3, Wells-street, Scunthorpe, the Council's Inspector.

FEBRUARY 11. — **Shepley.** — SEWER VENTILATING SHAFTS.—Shepley U.D.C. invite tenders for the supply and fixing of seven sewer ventilating shafts. Particulars on application to Mr. E. Emmott, Clerk, Far Bank, Shelley.

FEBRUARY 11. — **Spennymoor.** — TIMBER. — For creosoted timber for fencing in the new burial ground for St. Peter's Church, Byers Green. Also tenders for fixing the same. Particulars may be had on application to the architect, Mr. John Coldwell, Spennymoor.

FEBRUARY 12. — **Sedgefield.** — SCAVENGING. — The R.D.C. of Sedgefield invite tenders for the removal of house refuse and the emptying of ash closets, ashpits, and privies in the Townships of Chilton, Cornforth, and Ferryhill. Further information and forms of tender may be obtained at the office of Mr. G. S. Thompson, Inspector to the Council, Crag House, Ferryhill.

FEBRUARY 12.—**Stirling.**—CARTING.—The T.C. invite tenders for the carting work required for the cleansing and other departments. Conditions of contract may be seen at the Burgh Surveyor's Office.

FEBRUARY 13. — **Boston.**—CARTING.—Boston R.D.C. invite tenders for carting road materials. Forms of application, etc., can be obtained from the District Surveyors or from Mr. H. Snaith, Clerk, 10, New-street, Boston.

FEBRUARY 13. — **Wallasey.** — SEATS. — Wallasey U.D.C. invite tenders for 100 promenade seats. Specifications, etc., can be obtained on application to Mr. W. H. Travers, Engineer and Surveyor, Public Offices, Egremont, Cheshire.

FEBRUARY 14.—**Horncastle.**—CARTING.—The R.D.C. of Horncastle invite tenders for the carting of about 7,925 tons of granite and slag. Forms of tender may be obtained on application at the offices of the Council or from the District Surveyors.

FEBRUARY 15. — **Northampton.**—CARTING.—Northamptonshire C.C. Roads and Bridges Committee invite tenders for the carting of metal. Forms of tender and schedule of quantities from Mr. C. S. Morris, County Surveyor, County Hall, Northampton.

FEBRUARY 19. — **Hardingstone.** — TEAM LABOUR.—The R.D.C. of Hardingstone invite tenders for team labour on the several district roads. Tender forms, etc., may be obtained of Mr. J. C. Sturges, Surveyor, 13, Lutterworth-road, Northampton.

FEBRUARY 28. — **Hull.** — DREDGING. — The Humber Conservancy Board invite tenders for dredging about one million and a quarter cubic yards of material from the southern edge of the Hebble Shoal, near Hull. Plans, etc., may be seen at the office of the engineer to the Board, Mr. A. E. Butterfield, from whom specifications may be obtained.

NO DATE.—**Hereford.**—DEMOLITION.—Demolition of Nos. 78 and 79, St. Owen-street, Hereford, in accordance with the requirements of the Hereford T.C. Apply H. D., 22, Carpenter-road, Edgbaston, Birmingham.

PAINTING, etc.

FEBRUARY 4.—**Cardiff.**—PAINTING.—Cardiff Corporation invite tenders for painting and renovating the ladies' swimming baths and the laundry at the Guildford-crescent Baths. Specifications, etc., can be obtained on application at the office of the City Engineer, Mr. W. Harpur, M.Inst.C.E., City Hall, Cardiff.

FEBRUARY 8-12.—**North Shields.**—PAINTING.—North-Eastern Railway Directors invite tenders for painting the station buildings, etc., on the following branches, viz.:—North Shields to Monkseaton, Heaton Junction to North Shields, Riverside Branch, Sunderland to Durham Elvet, and Gateshead East and Gateshead West Stations. Specifications, etc., may be obtained on application to Mr. Charles A. Harrison, Engineer, Forth Banks, Newcastle-on-Tyne.

FEBRUARY 11.— **Aberdare.**— PAINTING.— Merthyr Tydfil Guardians invite tenders for painting and colouring the Training School and Cottage Homes at Aberdare. Specification may be seen at the Training School upon application to the Superintendent.

FEBRUARY 11.—**Porthcawl.**—PAPERING, ETC.—Papering, painting, and decorating, etc., the Pier Hotel, Porthcawl. Specifications can be seen either at the Pier Hotel, Porthcawl, or at office of Mr. T. Roderick, architect, Clifton-street, Aberdare.

ROADS, SANITARY, AND WATER WORKS.

FEBRUARY 10. — **Halifax.** — STREET IMPROVEMENTS.—Halifax Highways Committee invite tenders for the execution of private improvement works. Plans, etc., may be seen, and form of tender obtained, on application to Mr. James Lord, M.Inst.C.E., Borough Engineer, Town Hall, Halifax, upon payment of the sum of 1*l.*

FEBRUARY 10.—**Latchford.**—FORMING, ETC., STREETS.—Warrington Paving and Sewerage Committee invite tenders for the forming and paving of two streets adjoining the Bolton Council School, Latchford. Drawings, etc., may be seen, and form of tender, etc., obtained, at the office of the Borough Surveyor, Town Hall. A deposit of 1*l.* 1s., made payable to the Borough Treasurer.

FEBRUARY 10. — **Manchester.** — HOUSE DRAINAGE WORK.—Manchester Corporation invite tenders for the execution of general contractors' and plumbers' work that may be required in connexion with the drainage of houses and other premises. Forms of tender, etc., for each of the seven sections of the city may be obtained, and samples of work and materials seen, on application to Mr. H. Prescott, Manager of the House Drainage Department, on payment of 1*l.* 1s. for each of the said sections.

FEBRUARY 10.—**Southend-on-Sea.**—ROAD WORKS.—Southend-on-Sea Corporation invite tenders for the making-up of parts of Electric-avenue and Westborough-road. Plans, etc., may be seen, and bills of quantities, etc., obtained, on deposit of cheque for 1*l.* 1s. in respect of each street, upon application to Mr. E. J. Elford, M.Inst.M.E., Borough Surveyor.

FEBRUARY 12.—**Birmingham.**—SEWERS AT WASHWOOD HEATH.—The Public Works Committee invite tenders for the construction of about three-quarters of a mile of brick-and-concrete and pipe sewers in the Washwood Heath District. Plans, etc., may be seen, and quantities, etc., obtained, on deposit of the sum of 2*l.* Mr. Henry E. Stilgoe, M.Inst.C.E., City Engineer and Surveyor, the Council House, Birmingham.

FEBRUARY 12. — **Rochdale.** — SEWER. — Rochdale Paving, etc., Committee invite tenders for the construction of a sewer. Plans, etc., may be seen, and copies of the quantities, etc., obtained, on payment of a deposit of 10s. 6d., at the office of Mr. S. S. Platt, Borough Surveyor, Town Hall, Rochdale.

FEBRUARY 12. — **Twickenham.** — STREET IMPROVEMENTS.—Twickenham U.D.C. invite tenders for widening, sewering, forming, etc., of St. Margaret's-road. Plan, etc., may be seen, and bill of quantities, etc., obtained, on application at the office of Mr. Fred. W. Pearce, F.S.I., Surveyor to the Council, Town Hall, Twickenham, and the payment at office of Mr. H. Jason Saunders, Clerk to the Council, Town Hall, Twickenham, of a deposit of 1*l.* 1s.

FEBRUARY 12. — **Ulverston.**—ROAD IMPROVEMENT.—The R.D.C. of Ulverston invite tenders for widening the road near Tilberthwaite Farm. Plans may be seen, and specifications, etc., obtained, from the Superintendent Surveyor of Highways, Town Hall, Ulverston.

FEBRUARY 13. — **Bowness-on-Windermere.** — ROADS.—For the completion of the main road on the Craig Estate, Bowness-on-Windermere, for the Right Hon. Lord Decies. Plans, etc., may be seen, and bills of quantities obtained, at the office of Mr. Joseph Bintley, 7, Lowther-street, Kendal.

FEBRUARY 13. — **Stockport.** — PAVING, ETC.—Stockport Highways and Sewers Committee invites tenders for manual and team labour for paving and repairing carriageways, manual and team labour for mason's work on footpaths, etc. Specifications, etc., may be seen, and forms of tender, etc., obtained, on application to Mr. John Atkinson, A.M.Inst.C.E., Borough Surveyor, Borough Surveyor's Office, Stockport.

* FEBRUARY 14.—**London.**—DUST REMOVAL, ETC.—The Holborn Borough Council invite tenders for removal of slop and dust, hire of horses, and drivers for water-vans, etc., and for cartage. For further particulars see advertisement in this issue.

FEBRUARY 14. — **Trealaw, etc.** — WIDENING. — Rhondda U.D.C. invite tenders for:—(1) Widening

and improvement of parts of Miskin-road, Trealaw; Tylacelyn-road, Penygraig; and Dunraven-street, Tonypandy; (2) widening and improvement of Margaret-street, Pontygwaith. Plans may be seen, and specifications, etc., obtained, at the Public Offices, Pentre, Rhondda, on depositing the sum of 1*l.* 1s. for each contract.

FEBRUARY 15.—**Alnwick.**—ROADS.—The R.D.C. of Alnwick invite tenders for:—(1) Providing and breaking, and (2) for leading and laying on of materials (in separate tenders). Forms of tender, etc., may be obtained on application to the District Surveyors, Council Office, Fenkle-street, Alnwick.

FEBRUARY 17.—**Crieff.**—SEWERS AND SEWAGE PURIFICATION WORKS.—The T.C. of Crieff invite offers for the construction of fireclay sewers and drains, from 24 in. to 6 in. in diameter, and iron sewage syphon, a sewage lift, tanks and filters. Drawings may be seen at the office of Mr. Gilbert Thomson, civil engineer, 164, Bath-street, Glasgow, from whom copies of the specification, etc., may be obtained on payment of 2*l.* 2s.

FEBRUARY 17.—**Earsdon.**—PAVING, ETC.—Earsdon U.D.C. invite tenders for the carrying out of the work in connexion with the paving and flagging, etc., of the back street adjoining Brookland-terrace, Mafeking-terrace, Coronation-terrace and Forsyth-street, New York, and approaches. Plans, etc., may be seen at the Council Offices, Shiremoor, on application to the Surveyor, Mr. J. R. MacMillen.

FEBRUARY 17.—**Glasgow.**—SEWER.—Glasgow Corporation invite tenders for the construction of a 2 ft. 6 in. brick sewer in London-road, Bridgeton Cross, and Orr-street. Specifications, etc., may be had on application at the office of Public Works, City-chambers, Cochrane-street.

FEBRUARY 17.—**Plymouth.**—MAKING-UP.—Plymouth Corporation invite tenders for making-up and completing streets and lanes. Plans, etc., may be seen at offices of Mr. James Paton, Borough Engineer, Municipal Offices, Plymouth, and bills of quantities obtained.

FEBRUARY 17.—**Upminster.**—WATER MAINS.—Romford R.D.C. invite tenders for providing and laying about 1,510 yds. of 3-in. cast-iron water main at Upminster Common. Plan, etc., may be seen, and forms of tender obtained, at the office of the surveyor, Mr. E. G. Boden, Victoria-chambers, Romford.

★ FEBRUARY 18. — **Bromley.** — MATERIALS AND WORKS.—The Bromley B.C. invite tenders for works and materials. For further particulars see advertisement in this issue.

FEBRUARY 18. — **Newport (I. of W.).** — LAYING PIPES.—Isle of Wight T.C. invite tenders for:—(1) The supply of 1,128 yds. of 12-in. cast-iron spigot and socket pipes, etc.; (2) the carting of the said pipes, and the excavation for and laying of the same from the Waterworks, Carisbrooke, to the new reservoir there. Plans, etc., may be seen, and specifications, etc., may be obtained on application at office of Mr. T. Ross Pratt, Town Clerk, Town Clerk's Office, 19, Quay-street, Newport, I.W.

FEBRUARY 18. — **Selsey.** — LAYING PIPES.—Selsey Water Company invite tenders for laying and jointing about 7½ miles of steel tubes and cast-iron pipes of 5 in. internal diameter, also the laying and jointing of short lengths of cast-iron pipes, etc. Copies of specification, etc., obtained at the office of the Company's Engineer, Mr. Gerrard H. Perryn, 28, Victoria-street, Westminster, on payment of 2*l.* 2s. by cheque.

FEBRUARY 19.—**Handsworth.**—NEW SEWAGE OUTFALL WORKS.—Handsworth U.D.C. invite tenders for the carrying out of additional works at three of their sewage outfalls. Drawings, etc., may be seen, and bills of quantities obtained, at the Council Offices, Woodhouse, on payment of a deposit of 2*l.* 2s.

FEBRUARY 20-MARCH 12.—**Reading.**—MILL-LANE IMPROVEMENT.—Covering over St. Giles's Mill Stream, paving, metalling, kerbing, channelling, and other works. Drawing, etc., may be seen at my offices, Town Hall, Reading. Copy of general conditions, etc., will be supplied on application at offices of Mr. John Bowen, A.M.Inst.C.E., Borough Engineer and Surveyor, Town Hall, Reading, after payment to the Borough Accountant of a deposit of 3*l.* 3s.

FEBRUARY 22.—**Penzance.**—HARBOUR WORKS.—The Sennen Cove Harbour Commissioners invite tenders for the construction of a masonry breakwater and other works in and adjoining the harbour at Sennen Cove, near Penzance. Contract drawings, etc., may be seen on application to Mr. T. H. Cornish, Clerk to the Commissioners, 8, Parade-street, Penzance, or at the office of the Engineer to the Commissioners, Mr. W. T. Douglass, 15, Victoria-street, Westminster, S.W. Copies of the form of tender, etc., may be obtained on application to the Engineer upon payment of a deposit of 1*l.* 1s.

★ FEBRUARY 26.—**Kingston-on-Thames.**—ROADS, ETC.—The Kingston-on-Thames Corporation invite tenders for levelling, paving, metalling, channelling, sewering, and lighting a portion of Norbiton-avenue. For further particulars see advertisement in this issue.

FEBRUARY 29.—**Paignton.**—WATER MAINS.—The U.D.C. of Paignton invite tenders for the supply, delivery, and laying of about eight miles of 9-in., 6-in., 4-in., and 3-in. cast-iron water mains, and contingent works; also the construction of a concrete-covered reservoir, in the Parishes of Paignton and Marldon. Drawings, etc., may be seen, and copies of bills of quantities, etc., obtained, at the office of the engineer, Mr. Fred. Wm. Vanstone, Palace-chambers, Paignton, on payment of 5*l.* 5s.

MARCH 7.—**Glasgow.**—DRAINAGE WORKS.—Glasgow Corporation invite tenders for the construction of sewer No. 4, contract No. 1, extending from the site of the pumping-station in St. James-street at Park-street, to a point in Govan-street, east of Crown-street, and pipe sewer (No. 5), extending from a point in Paisley-road, at St. James-street, to a point in Old Govan-road, at Rutland-lane. Plans, etc., may be seen, and specifications, etc., obtained, on application to the City Engineer, at his office, City-chambers, 64, Cochrane-street, Glasgow, on payment of a fee of 5*l.* 5s.

STONE, MATERIALS, AND STORES.

FEBRUARY 10.—**Manchester.**—IRON CASTINGS.—The Corporation invite tenders for the supply of ventilating grids and other castings. Samples may be seen, and forms of tender obtained, on application to Mr. H. Prescott, Manager of the House Drainage Department.

FEBRUARY 10. — **Southampton.** — STORES. — Southampton Corporation invite tenders for the supply of various stores to the Waterworks Department. Specification, etc., may be obtained upon application to Mr. W. Matthews, Waterworks Engineer, 33 and 35, French-street, Southampton.

FEBRUARY 10.—**West Ham.**—TIMBER.—West Ham Education Committee invite tenders for the supply of timber for use in the manual instruction centres. Forms of tender and copy of specification may be obtained at office of Mr. Fred. E. Hilleary, Town Clerk, 95, The Grove, Stratford, E.

FEBRUARY 11.—**Cardiff.**—STORES, ETC.—The Corporation of Cardiff invite tenders for the period of one year for:—(1) Public street works; (2) supply of stone and gravel; (3) supply of cement; (4) supply of stores. Specifications, etc., may be seen, and schedules, etc., obtained, at the office of the City Engineer, City Hall, Cardiff.

FEBRUARY 11. — **London.** — WOOD SCREWS, ETC.—Bombay, Baroda, and Central India Railway Directors invite tenders for the supply of:—Class A—(1) Wood screws, etc. Class B—(1) spring steel. Forms, etc., can be obtained of Mr. W. V. Constable, Secretary, offices, Gloucester House, 2, Bishopsgate-street Without, E.C., on payment as follows:—For Class A, 1*l.* 1s. each, and for Class B, 10s. 6d. each (which will not be returned).

FEBRUARY 11. — **Middlesbrough.** — WHINSTONE.—The Middlesbrough R.D.C. invite tenders for the supply of whinstone (broken and unbroken) and of limestone for macadamising purposes. Further particulars and forms of tender may be obtained on application to Mr. W. H. Dixon, District Surveyor, Kirkby-in-Cleveland, near Stokesley, R.S.O.

FEBRUARY 11. — **Sheffield.** — STORES. — Sheffield Cleansing Department invite tenders from Sheffield tradesmen for the supply of:—Oils, paints, brushes, etc.; cleaning materials; iron and steel; nuts, bolts, and washers, etc. Forms, etc., may be obtained on application from the above offices, Town Hall.

FEBRUARY 11.—**Stoke Newington.**—STORES, ETC.—The Borough of Stoke Newington invites tenders for works and supplies. For particulars and forms of tender apply to Surveyor, Town Hall, Milton-road, Stoke Newington.

FEBRUARY 12. — **Glasgow.** — STORES.—Glasgow and South-Western Railway Directors invite tenders for the supply of:—No. 34. Building stone; No. 35. Iron castings; No. 36. Larch fencing; No. 37. Lime and Portland cement. Detailed schedules, etc., can be obtained on application to Mr. R. F. Harrison, Stores Superintendent, Kilmarnock. Also No. 38. Wire fencing, and erecting same. For particulars of which apply to the Company's Engineer, St. Enoch Station.

FEBRUARY 12.—**Gorbals, etc.**—METAL FOR ROADS.—Metal for the roads in the Gorbals and Paisley Divisions of the First or Upper District of the County of Renfrew. Specifications, etc., may be obtained on application to Mr. William H. Hill, 194, Ingram-street, Glasgow, or Mr. James Gibson, Road Surveyor, Newton Mearns, respecting the Gorbals Division, and Mr. Robert Drummond, Road Surveyor, Fairfield, Paisley, respecting the Paisley Division.

FEBRUARY 12.—**Halifax.**—MATERIALS, ETC.—Halifax Corporation invite tenders for the supply of stores and materials. Forms, etc., may be obtained on application to Mr. James Lord, M.Inst.C.E., Borough Engineer, Town Hall, Halifax.

FEBRUARY 12. — **London.**—WORK, MATERIALS.—The Council of the Royal Borough of Kensington invite tenders for work, materials, etc., for one year. Forms of tender may be had, and further particulars obtained, on application at the office of Mr. Wm. Chambers Leete, Town Clerk, Town Hall, Kensington.

FEBRUARY 13.—**Cuckfield.**—ROAD MATERIAL.—Cuckfield R.D.C. invite tenders for the supply of about 1,000 cubic yds. of flints and 5,000 tons of granite and tarred material. Further particulars, etc., may be obtained from the Surveyor, Mr. A. MacArthur, C.E., Council Buildings, Boltro-road, Haywards Heath.

FEBRUARY 13. — **Escrick.** — STONE.—Escrick R.D.C. invite tenders for the supply of best whinstone, tar macadam, slag, and granite. Forms of tender can be obtained of Mr. Fred. A. Camidge, Clerk to the above Council, 3, Stonegate, York, on receipt of stamped, addressed, foolscap envelope.

FEBRUARY 13. — **Frome.** — STORES. — The Frome U.D.C. invite tenders for the supply of materials. Particulars, etc., may be obtained upon application to Mr. F. W. Jones, A.M.Inst.C.E., the Public Offices, Frome.

FEBRUARY 13.—**Salford.**—LIME.—Salford Gas Committee invite tenders for the supply of about 700 tons of lime. Full particulars may be obtained on application to Mr. William W. Woodward, Engineer, Gas Offices, Bloom-street, Salford.

FEBRUARY 13.—**Stockport.**—MATERIALS.—The Highways and Sewers Committee invites tenders for the supply of materials. Specifications, etc., may be seen, and forms of tender, etc., obtained, on application to Mr. John Atkinson, A.M.Inst.C.E., Borough Surveyor, Borough Surveyor's Office, Stockport.

FEBRUARY 13. — **Stokesley.**—STONE.—The Stokesley R.D.C. invite tenders for the supply of whinstone (broken and unbroken), and of limestone, for macadamising purposes. Further particulars and forms of tender may be obtained on application to Mr. W. H. Dixon, District Surveyor, Kirkby-in-Cleveland, near Stokesley, R.S.O.

FEBRUARY 13. — **Wolverhampton.** — ANNUAL CONTRACT FOR LIME.—The Sewerage Committee invite tenders for the supply and delivery of lime to the Sewage Outfall Works. Specifications and forms of tender may be obtained from Mr. Wm. Clifford, A.M.Inst.C.E., Manager, Sewage Outfall Works, Wolverhampton.

FEBRUARY 14. — **Hardingstone.**—STONE, ETC.—The R.D.C. of Hardingstone invite tenders for the supply of Hartshill, Groby, Tuttle Hill, Mount Sorrel, and other granite, and slag, and also for the supply of footpath chippings. Forms of tender may be obtained at office of Mr. John R. Phillips, Clerk, 2, St. Giles'-square, Northampton.

FEBRUARY 14. — **Horncastle.** — ROAD MATERIALS.—The R.D.C. of Horncastle invite tenders for the supply of about 6,485 tons of granite (XX) and about 1,440 tons of slag. Specifications, etc., may be obtained on application at the office of the Council.

FEBRUARY 15.—**Bootle.**—MATERIALS.—Bootle Corporation invite tenders for the supply of stores and materials, and the execution of repairs. Forms of tender may be obtained at the Borough Engineer's Office, Town Hall, and samples inspected at the Town Hall yard.

FEBRUARY 15.—**Bridgend.**—MATERIALS AND HAULAGE.—Glamorgan C.C. invite tenders for material and haulage, Aberdare Division, Llandaff Division, Bridgend Division, Swansea Division. Forms of tender can be obtained from Mr. Geo. A. Phillips, County Surveyor, Town Hall, Bridgend.

FEBRUARY 15.—**Bury.**—MATERIALS.—The Corporation of Bury invite tenders for the supply and delivery of materials. Subject to the terms and conditions contained in the specifications prepared by Mr. Arthur W. Bradley, A.M.Inst.C.E., Borough Engineer.

FEBRUARY 15. — **Leigh.** — MATERIALS. — Leigh Corporation invite tenders for the supply of materials. Specifications, etc., may be obtained from Mr. Tom Hunter, Borough Surveyor, Leigh, Lancashire.

FEBRUARY 15. — **Middleton Cheney.** — ROAD MATERIAL.—The supply of best Hartshill or other granite, broken and free from chippings. Specifications, etc., may be obtained of Mr. William J. Treadwell, District Surveyor, Middleton Cheney, Banbury.

FEBRUARY 15. — **Northampton.**—GRANITE.—Northamptonshire C.C. Roads and Bridges Committee invite tenders for the supply of granite. Forms of tender, etc., from Mr. C. S. Morris, County Surveyor, County Hall, Northampton.

FEBRUARY 16.—**Selby.**—WHINSTONE AND SLAG.—For the supply of whinstone and slag for the Selby U.D.C. Tenders to be sent to Mr. Bruce McGregor Gray, A.M.Inst.C.E., Town Surveyor, Council Offices, Selby, upon forms supplied.

FEBRUARY 17. — **Battersea.** — STORES.—Battersea B.C. invite tenders for:—Bricks, cement, lime, slates, etc.; granite and stone; gravel and flints, etc. Forms of tender may be obtained at the Town Hall.

FEBRUARY 17. — **Beverley.**—STONE.—Beverley D.C. Highways Committee invite tenders for the supply of about 5,000 to 6,000 tons of stone for macadamising. Particulars, etc., may be obtained on application to Mr. E. Picker, C.E., Surveyor, Beverley.

FEBRUARY 17. — **Burton-upon-Trent.** — STONE.—Burton-upon-Trent Corporation invite tenders for the supply of materials, goods, tools, etc., for six or twelve months. Forms of tender may be had on application at the Borough Surveyor's Office, and samples may be inspected at the Bond End Stores on application to the Storekeeper.

FEBRUARY 17. — **Claypole.** — ROAD MATERIALS.—The R.D.C. of Claypole invite tenders for the supply of about 2,000 tons of granite and 1,800 tons of slag. Further particulars may be obtained upon application to the District Surveyor, Mr. F. C. Meyrick, Brant Broughton, Newark.

FEBRUARY 17.—**Hackney.**—WORKS AND MATERIALS.—Hackney B.C. invite tenders for the execution of works and the supply and delivery of materials. Specifications, etc., may be obtained on application at the office of the Borough Engineer and Surveyor, Mr. Norman Scorgie, M.Inst.C.E., Town Hall, Hackney, N.E., and on deposit in each case of a sum of 10s.

FEBRUARY 17.—**London.**—MATERIALS.—The Southern Mahratta Railway Company invite tenders for the supply and delivery, free on board, of zinc, copper, lead, tin sheets, carpenters' tools, etc. Tenders to be delivered in sealed envelopes (supplied by the Company). A charge (which cannot be refunded) will be made for each copy of the specification. Mr. W. H. Cole, Assistant Secretary, 1, Broad-street-place, Finsbury-circus, London, E.C.

FEBRUARY 17. — **Rawtenstall.** — MATERIALS AND LABOUR.—The Corporation invite tenders for the supply of earthenware pipes and gullies, timber, pitch, and creosote oil, etc. Forms of tender can be obtained on application to the Borough Surveyor, Municipal Offices, Rawtenstall.

FEBRUARY 17.—**St. Thomas, Exeter.**—MATERIALS. St. Thomas R.D.C. invite tenders for the supply and hauling of materials for the maintenance and repair of the main and district roads. Specifications, etc., can be obtained on application to Mr. Arthur E. Ward, 9, Bedford-circus, Exeter, Solicitor, Clerk to the said District Council.

FEBRUARY 18.—**Bromley.**—MATERIALS.—The Council of the Borough of Bromley invite tenders for timber, ironmongery, builders' materials, tools, etc. Particulars, etc., may be obtained at the Municipal Buildings on payment of the sum of 10s.

FEBRUARY 18.—**Hemel Hempsted.**—ANNUAL CONTRACTS.—The supply of requisites for the year ending March 31, 1909. Forms from Mr. Walter R. Locke, Borough Engineer and Surveyor, Town Hall, Hemel Hempsted.

FEBRUARY 18. — **Lewes.** — ROAD MATERIALS. — East Sussex C.C. invite tenders for road materials, cartage, and team labour. Further particulars, etc., can be obtained on application to Mr. F. J. Wood, A.M.Inst.C.E., County Surveyor, County Hall, Lewes.

FEBRUARY 18.—**Lewisham.**—ANNUAL CONTRACTS FOR SUPPLIES.—Sewerage, jobbing works, road materials, horse hire, etc. Specifications and forms of tender may be obtained at the offices of the Borough Surveyor, Town Hall, Catford.

FEBRUARY 19.—**Dublin.**—STORES.—The Corporation invite tenders for stores and articles. Specifications, etc., may be obtained at the offices of Mr. Spencer Harty, Borough Surveyor, City Hall, Dublin, on payment of 1s. for each form.

FEBRUARY 19. — **London.** — TIMBER. — The Great Western Railway Directors invite tenders for the supply of carriage timber. Specifications, etc., may be obtained on application to Mr. G. K. Mills, Secretary, Paddington Station, London, W.

FEBRUARY 19. — **Torquay.**—VALVES, ETC.—Torquay T.C. invite tenders for the supply of sluice valves and fire hydrants. Forms of tender may be obtained from Mr. Samuel C. Chapman, A.M.Inst.C.E., Water Engineer, Town Hall Chambers, Torquay.

FEBRUARY 19. — **Warwick.**—CLEANING MATERIALS.—Warwickshire Education Committee invite tenders for the supply of cleaning materials for certain of the public elementary schools. Forms of tender may be obtained from the Director of Education, Education Office, Warwick.

FEBRUARY 20. — **Headington.** — MATERIAL. — The R.D.C. of Headington invite tenders for supply of iron slag, Hartshill, or Mendip, or other approved stones, and gravel, and carting of same. Particulars, etc., can be obtained from the District Surveyor, Mr. J. C. Coates, Hartfield Cottage, New Headington.

FEBRUARY 20. — **Leyton.** — ROAD MATERIALS, ETC.—Leyton U.D.C. invite tenders for road materials, horse hire and cartage, stoneware pipes, junctions, gully pots, etc., sewerage ironwork, and disinfectants. Forms of tender, etc., may be obtained at the office of Mr. William Dawson, M.Inst.C.E., Surveyor to the Council, Town Hall, Leyton, E.

FEBRUARY 20. — **Southampton.** — STONE.—Tenders are required for the supply of about 38,000 tons of stone for the repair of the main roads. Form of tender may be obtained on application to Mr. W. J. Taylor, County Surveyor, The Castle, Winchester.

FEBRUARY 20. — **Witney.** — ROAD MATERIAL. — The R.D.C. of Witney invite tenders for the supply of Hartshill, Leicestershire granite, Clee Hill, Rowley Regis, Mendip, and other stones broken to 2-in. gauge. Forms of tender, etc., can be obtained from the Surveyors, Mr. George Wallis, Bampton, Oxon., for the East Division, and Mr. D. H. W. Powell, Brizenorton, Bampton, Oxon., for the West Division.

FEBRUARY 22. — **Manchester.** — MATERIALS. — The Rivers Committee invite tenders for :—(2) Lime (about 700 tons); (4) oils, paints, etc.; (5) shovels, forks, cleaning waste, etc.; (6) carting and hauling débris from rivers. Specifications, etc., may be obtained on application to the Secretary of the Rivers Department, Town Hall.

FEBRUARY 22.—**Sibsey.**—GRANITE AND SLAG.—Sibsey R.D.C. invite tenders for the supply of from 1,200 to 1,500 tons of broken X and XX granite, at per ton. Also for the supply of from 1,000 to 1,200 tons of broken X and XX slag. Forms to be obtained on application to Mr. John M. Simpson, Clerk to the Council, Boston.

FEBRUARY 22. — **Warrington.** — MATERIALS.—Warrington Water Committee invite tenders for the supply of materials. A deposit of 10s. per section is required. Particulars may be obtained from Mr. James Deas, Water Engineer, Municipal Offices.

FEBRUARY 24.—**Holyhead.**—PIPES AND CASTINGS.—The Waterworks Company invite tenders for the manufacture and delivery of about 1,370 tons of cast-iron pipes and special castings. A copy of the specification and form of tender can be obtained at the office of Messrs. H. Rofe & Son, civil engineers, 8, Victoria-street, Westminster, on payment of 5*l.* 5s.

FEBRUARY 24. — **Little Hulton.** — ANNUAL CONTRACTS.—The Council invite tenders for the supply of broken granite, grit setts, granite, limestone, etc. Forms of tender and particulars can be obtained from Mr. James H. Heyes, Clerk, Council Offices, Little Hulton.

FEBRUARY 25. — **Barking Town.** — ANNUAL CONTRACTS.—The U.D.C. invite tenders for the supply and delivery of goods and the execution of works for twelve months. Forms of tender, etc., may be obtained at the Clerk's Office, Public Offices, Barking.

FEBRUARY 25.—**Derby.**—STORES.—Derby B.C. invite tenders for the supply of materials, etc. Samples can be seen upon application at the Borough Surveyor's Office. Printed forms of tender, etc., may be obtained upon application at the office of Mr. John Ward, M.Inst.C.E., Borough Engineer, Borough Surveyor's Office, Babington-lane, Derby.

FEBRUARY 25.—**York.**—ARTICLES.—York Corporation invite tenders for the supply of articles during the year ending March 31, 1909. Forms of tender will be supplied upon application to office of Mr. F. W. Spurr, City Engineer, Guildhall, York.

FEBRUARY 27. — **Rainhill.** — STORES. — Lancashire Asylums Board, County Asylum, Rainhill. Visiting Committee, invite tenders for supplying materials, etc. Printed forms may be had on application to Mr. Jas. Gornall, Clerk and Steward, Clerk's Office, Rainhill Asylum.

MARCH 2.—**London.**—STORES.—Metropolitan Water Board invite tenders for the supply of stores, execution of works, etc. Forms may be obtained from the Clerk, Savoy-court, Strand, W.C., by personal application or on receipt of a stamped addressed envelope.

MARCH 2. — **Sleaford.** — GRANITE, ETC. — Sleaford U.D.C. invite tenders for granite and slag. Printed forms of tender may be obtained on application to Mr. Edmund Clements, Clerk, Council Offices, Sleaford.

MARCH 7. — **Belper.** — ROAD MATERIAL. — Belper R.D.C. invite tenders for road materials, etc. Specification, etc., may be obtained from the Surveyor, Mr. Robert C. Cordon, Duffield, near Derby.

Public Appointments.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*QUANTITY SURVEYOR	Glamorgan County Council ...	2*l.* 12s. 6d. per week	Feb. 14
*CHIEF BILL CLERK	Corporation of London	200*l.* per annum	Feb. 15
*ASSISTANT INSPECTOR OF SEWERS AND DRAINS	Corporation of London	2*l.* per week	do.
*FOREMAN (LETT'S WHARF)	Corporation of London	3*l.* 10s., etc., per week	do.
*CLERK (LETT'S WHARF)	Corporation of London	2*l.* per week	do.
*SURVEYOR	Cheshunt U.D.C.	250*l.*	Feb. 29

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*DEALS, BATTENS, ETC.—Great Hall, Winchester House, Old Broad-street, E.C.	Churchill & Sims	Feb. 12
*ARTIFICIAL STONE WORKS, WREXHAM—At the Mart	Fuller, Horsey, Sons, & Cassell	Feb. 24
*CREWE HOUSE, MAYFAIR—At the Mart	Farebrother, Ellis, Egerton, Breach, Galsworthy, & Co.	Feb. 27
*MACHINERY OF JOINERY WORKS, TWICKENHAM—On Premises	David J. Chattell	do.
*FREEHOLD PROPERTIES, BATTERSEA, KENSINGTON, CHELSEA, ETC.—At the Mart	Debenham, Tewson, Richardson, & Co.	March 3
*FREEHOLD BUILDING ESTATES—At the Mart	Ferris & Puckridge	April 10

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

January 23.—By R. WOOD (at Ross).

Weston-Under-Penyard, Herefordshire.—Laneend House, 1 a. 0 r. 3 p., f., y.r. 20*l.* £350

January 27.—By MARK LIELL & SON (at Ilford).

Ilford.—99, 101, 113, 115, and 121, Francis-av., u.t. 99 yrs., g.r. 20*l.*, w.r. 104*l.* 490

Manor Park.—113 to 159 (odd), Walton-rd., u.t. 90 yrs., g.r. 90*l.*, w.r. 400*l.* 309

January 28.—By DEBENHAM, TEWSON, RICHARDSON, & Co.

South Kensington.—20, Rosary-gdns., u.t. 72 yrs., g.r. 2*l.*, p. 1,800

Paddington.—81, Fernhead-rd. (s.), u.t. 55½ yrs., g.r. 10*l.*, y.r. 60*l.* 670

By EDWIN EVANS.

Clapham.—Wandsworth-rd., f.g. rents, 12*l.*, reversion in 54½ yrs. 350

Battersea.—York-rd., f.g. rents 7*l.* 19s. 11d., reversion in 59½ yrs. 215

Plumstead.—High-st., f.g. rents 22*l.* 16s., reversion in 23¾ to 31½ yrs. 850

Acton.—Grafton-rd., f.g. rents 60*l.*, reversion in 85 yrs. 1,520

January 28.—By TYLER & Co.

Regent's Park.—8, Kent-ter., u.t. 18 yrs., g.r. 32*l.*, y.r. 100*l.* 615

By J. C. PLATT (at Hammersmith).

Acton.—27, 29, and 31, Cowper-rd., f., w.r. 102*l.* 14s. 900

Chiswick.—31, Bolton-rd., u.t. 91 yrs., g.r. 5*l.* 10s. 230

Willesden.—38, Dudding-hill-la., u.t. 94 yrs., g.r. 7*l.*, w.r. 41*l.* 12s. 145

January 29.—By FRED. VARLEY.

Highbury.—132, and 134, Gillespie-rd., u.t. 74 yrs., g.r. 10*l.* 10s., w.r. 72*l.* 16s 400

Finsbury Park.—26, Fonthill-rd., u.t. 57 yrs., g.r. 7*l.*, e.r. 38*l* 265

Harringay.—109, Harringay-rd., u.t. 72 yrs., g.r. 6*l.* 6s., w.r. 39*l.* 140

Islington.—17, Coleman-st., u.t. 20 yrs., g.r. 4*l.* 4s., y.r. 35*l.* 140

4, Arlington-st., u.t. 19 yrs., g.r. 4*l.* 4s., y.r. 35*l.* 150

By EDWARD WATERMAN.

Sutton, Surrey.—Clarence-rd., f.g.r. 10*l.* 10s., reversion in 58 yrs. 205

January 30.—By DRYSDALE, NURSE, & Co.

Stamford Hill.—169, St. Ann's-rd. (s.), u.t. 61 yrs., g.r. 10*l.* 10s., y.r. 36*l.* 205

Stoke Newington.—105, Manor-rd., u.t. 67 yrs., g.r. 8*l.* 8s., e.r. 50*l.* £450

By MARK LIELL & SON.

Hackney.—5, Anne's-rd., u.t. 36 yrs., g.r. 4*l.* 4s., e.r. 32*l.* 230

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for office; s. for shops; ct. for court.

MEETINGS.

FRIDAY, FEBRUARY 7.

Architectural Association.—Mr. C. Harrison Townsend on "Garages and Motor-Houses." 7.30 p.m.

Royal Institution.—Mr. Humphry Ward, M.A., on "Napoleon and the Louvre." 9 p.m.

Junior Institution of Engineers (Royal United Service Institution, Whitehall).—Paper on "Aerial Navigation," by Mr. Herbert Chatley, B.Sc.Eng. 8 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. P. T. Steinthal, B.Sc., on "Electric Hardening and Annealing Furnaces." 8 p.m.

Royal Society of Arts (Shaw Lecture on Industrial Hygiene).—"The Hygiene of the Pottery Trade," by Mr. W. Burton, F.C.S. 8 p.m.

SATURDAY, FEBRUARY 8.

Royal Institution.—Mr. Lionel Cust, M.A., on "Anthony Van Dyck."—II. 3 p.m.

Junior Institution of Engineers.—Anniversary dinner at the Hotel Cecil, Strand. 7 p.m.

MONDAY, FEBRUARY 10.

London County Council School of Building, Clapham (Ferndale-road).—Professor Beresford Pite on "Panelling and Framing." (Lantern lectures for bricklayers, masons, carpenters, joiners, plasterers, plumbers.) 7.30 p.m.

Surveyors' Institution.—Mr. H. C. Brierley and Mr. W. H. Christy Clay on "The Railway Fires Act, 1905." 8 p.m.

University of London (South Kensington).—Mr. Banister Fletcher on "English Gothic Ornament and Internal Fittings." 8 p.m.

Royal Society of Arts (Cantor Lecture).—Mr. H. Hardinge Cunynghame, C.B., on "The Theory and Practice of Clockmaking."—Lecture IV. 8 p.m.

TUESDAY, FEBRUARY 11.

Institution of Civil Engineers.—(1) Mr. A. Low Dickie on "The Erection of the Pwll-y-Pant Viaduct on the Brecon and Merthyr Extension of the Barry Railway"; (2) "Notes on the Erection of Cantilever Bridges," by Professor T. Claxton Fidler. 8 p.m.

WEDNESDAY, FEBRUARY 12.

Architectural Association Discussion Section and the Junior Institution of Engineers.—Joint meeting at 18, Tufton-street, Westminster. Paper on "Suggestions as to how the Architect and Engineer may Combine," by Mr. Percy J. Waldram, F.S.I. 8 p.m.

Royal Sanitary Institute.—Discussion to be opened by Sir William Ramsay, K.C.B., LL.D., D.Sc., on "Rivers Pollution, with special reference to the Board proposed by the Royal Commission." 8 p.m.

Edinburgh Architectural Association.—Mr. M. Kahn on "Practical Side of Reinforced Concrete," illustrated with lantern slides. 8 p.m.

Northern Architectural Association.—Paper by Mr. J. Oswald. 7.30 p.m.

Northern Architectural Association.—Mr. Joseph Oswald on "The Glory that was Greece," illustrated with lantern views. 7.30 p.m.

Royal Society of Arts.—Mr. R. Buchanan, President, Staffordshire Iron and Steel Institute, on "The Application of Science to Foundry Work." 8 p.m.

Institution of Civil Engineers.—Students' visit to the Testing Works of Messrs. D. Kirkaldy & Son, 99, Southwark-street, S.E.

THURSDAY, FEBRUARY 13.

Carpenters' Hall, London Wall.—Mr. Philip Norman, F.S.A., on "Roman London." 8 p.m.

London Institution.—The Rev. Canon W. Benham, F.S.A., on "Newgate," illustrated. 6 p.m.

FRIDAY, FEBRUARY 14.

Glasgow Architectural Craftsmen's Society.—Mr. D. M. Kellar on "Building as it is generally done." 8 p.m.

Edinburgh Architectural Association.—Associates' annual dinner.

SATURDAY, FEBRUARY 15.

Royal Institution.—Mr. Selwyn Brinton, M.A., on "The Art of Florence."—I. 3 p.m.

Incorporated Clerks of Works Association.—Twenty-fifth annual dinner at the Hotel Cecil. 6 p.m.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 6 0	per 1000 alongside, in river.
Rough Stocks and Grizzles	1 5 0	„ „ „
Picked Stocks for Facings	2 10 0	„ delivered.
Flettons	1 5 6	„ at railway depôt.
Red Wire Cuts	1 14 0	„ „ „
Best Fareham Red	3 12 0	„ „ „
Best Red Pressed Ruabon Facing	5 0 0	„ „ „
Best Blue Pressed Staffordshire	3 15 0	„ „ „
Do. Bullnose	4 0 0	„ „ „
Best Stourbridge Fire Bricks	3 14 0	„ „ „
GLAZED BRICKS.		
Best White and Ivory Glazed Stretchers	12 0 0	„ „ „
Headers	11 0 0	„ „ „
Quoins, Bullnose, and Flats	16 0 0	„ „ „
Double Stretchers	19 0 0	„ „ „
Double Headers	16 0 0	„ „ „
One Side and two Ends	19 0 0	„ „ „
Two Sides and one End	20 0 0	„ „ „
Splays, Chamferred, Squints	20 0 0	„ „ „
Best Dipped Salt Glazed Stretchers, and Header	12 0 0	„ „ „
Quoins, Bullnose, and Flats	14 0 0	„ „ „
Double Stretchers	15 0 0	„ „ „
Double Headers	14 0 0	„ „ „
One Side and two Ends	15 0 0	„ „
Two Sides and one End	15 0 0	„ „ „
Splays, Chamferred, Squints	14 0 0	„ „ „
Second Quality White and Dipped Salt Glazed	2 0 0	„ less than best.

	s. d.	
Thames and Pit Sand	6 6	per yard, delivered.
Thames Ballast	5 0	„ „
Best Portland Cement	30 0	per ton, „
Best Ground Blue Lias Lime	19 6	„ „

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 12s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1 8½	„ „
PORTLAND STONE (20 ft. average)— Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 1	„ „
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 2½	„ „

	s. d.	
Ancaster in blocks	1 10	per ft. cube, deld. rly. depôt.
Beer „	1 6	„ „
Greenshill „	1 10	„ „
Darley Dale in blocks	2 4	„ „
Red Corsehill „	2 2	„ „
Closeburn Red Freestone	2 0	„ „
Red Mansfield „	2 4	„ „
YORK STONE—*Robin Hood Quality.*		
Scappled random blocks	2 10	„ „
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3 per ft. super., „
6 in. rubbed two sides ditto, ditto	2 6	„ „
3 in. sawn two sides slabs (random sizes)	0 11½	per ft. cube, „
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½	„ „
1½ in. to 2 in. ditto, ditto	0 6	„ „
HARD YORK—		
Scappled random blocks	3 0	„ „
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	8 per ft. super. „
6 in. rubbed two sides ditto	3 0	„ „
3 in. sawn two sides slabs (random sizes)	1 2	„ „
2 in. self-faced random flags	0 5	„ „

SLATES.

In. In.	£ s. d.	
20×10 best blue Bangor	13 2 6	per 1000 of 1200 at r. d.
20×12 „ „	13 17 6	„ „
20×10 first quality „	13 0 0	„ „
20×12 „ „	13 15 0	„ „
16×8 „ „	7 5 0	„ „
20×10 best blue Portmadoc	12 12 6	„ „
16×8 „ „	6 12 6	„ „
20×10 best Eureka unfading green	15 17 6	„ „
20×12 „ „	18 7 6	„ „
18×10 „ „	13 5 0	„ „
16×8 „ „	10 5 0	„ „

SLATES (*continued*).

In. In.	£ s. d.	
20×10 permanent green	11 12 6	per 1000 of 1200 at r. d.
18×10 „ „	9 12 6	„ „
16×8 „ „	6 12 6	„ „

TILES.

	s. d.	
Best plain red roofing tiles	42 0	per 1000 at rly. depôt.
Hip and Valley tiles	3 7	per doz. „
Best Broseley tiles	50 0	per 1000 „
Do. Ornamental tiles	52 6	„ „
Hip and Valley tiles	4 0	per doz. „
Best Ruabon red, brown, or brindled do. (Edwards)	57 6	per 1000 „
Do. Ornamental do.	60 0	„ „
Hip tiles	4 0	per doz. „
Valley tiles	3 0	„ „
Best Red or Mottled Staffordshire do. (Peakes)	51 9	per 1000 „
Do. Ornamental do.	54 6	„ „
Hip tiles	4 1	per doz. „
Valley tiles	3 8	„ „
Best "Rosemary" brand plain tiles	48 0	per 1000 „
Best Ornamental tiles	50 0	„ „
Hip tiles	4 0	per doz. „
Valley tiles	3 8	„ „
Best "Hartshill" brand plain tiles, sand-faced	50 0	per 1000 „
Do. pressed	47 6	„ „
Do. Ornamental do.	50 0	„ „
Hip tiles	4 0	per doz. „
Valley tiles	3 6	„ „

WOOD.

BUILDING WOOD.	At per standard. £ s. d.	£ s. d.	
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	13 10 0	15 0 0	
Deals: best 3 by 9	13 0 0	14 0 0	
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 0 0	12 0 0	
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.	
Deals: seconds	1 0 0	less than best.	
Battens: seconds	0 10 0	„ „	
2 in. by 4 in. and 2 in. by 6 in.	9 0 0	10 0 0	
2 in. by 4½ in. and 2 in. by 5 in.	8 10 0	9 10 0	
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.	
¾ in.	1 0 0	„	
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft. 4 10 0	5 0 0	
Seconds	4 0 0	4 10 0	
Small timber (8 in. to 10 in.)	3 12 6	3 15 0	
Small timber (6 in. to 8 in.)	3 0 0	3 10 0	
Swedish balks	2 10 0	3 0 0	
Pitch-pine timber (30 ft. average)	4 0 0	4 15 0	
JOINERS' WOOD.	At per standard.		
White Sea: first yellow deals, 3 in. by 11 in.	24 0 0	25 0 0	
3 in. by 9 in.	22 0 0	23 0 0	
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	18 0 0	
Second yellow deals, 3 in. by 1 in.	18 10 0	20 0 0	
„ „ 3 in. by 9 in.	17 10 0	19 0 0	
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	14 10 0	
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0	15 0 0	
Battens, 2½ in. and 3 in. by 7 in.	11 0 0	12 0 0	
Petersburg first yellow deals, 3 in. by 11 in.	21 0 0	22 10 0	
Do. 3 in. by 9 in.	18 0 0	19 10 0	
Battens	13 10 0	15 0 0	
Second yellow deals, 3in. by 11in.	16 0 0	17 0 0	
Do. 3 in. by 9 in.	14 10 0	16 0 0	
Battens	11 0 0	12 10 0	
Third yellow deals, 3 in. by 11 in.	13 0 0	14 0 0	
Do. 3 in. by 9 in.	12 10 0	14 0 0	
Battens	10 0 0	11 0 0	
White Sea and Petersburg— First white deals, 3 in. by 11 in.	14 10 0	15 10 0	
„ „ 3 in. by 9 in	13 10 0	14 10 0	
Battens	11 0 0	12 0 0	
Second white deals, 3in. by 11 in.	13 10 0	14 10 0	
„ „ 3 in. by 9 in.	12 10 0	13 10 0	
„ „ battens	10 0 0	11 0 0	
Pitch-pine: deals	18 0 0	21 0 0	
Under 2 in. thick extra	0 10 0	1 0 0	
Yellow pine—First, regular sizes	44 0 0	upwards.	
Oddments	32 0 0	„	
Seconds, regular sizes	33 0 0	„	
Yellow Pine oddments	28 0 0	„	
Kauri Pine—Planks, per ft. cube	0 3 6	0 5 0	
Danzig and Stettin Oak Logs— Large, per ft. cube	0 3 0	0 3 6	
Small „ „	0 2 6	0 2 9	
Wainscot Oak Logs, per ft. cube	0 5 6	0 6 0	
Dry Wainscot Oak, par ft. sup. as inch	0 0 8½	0 0 9½	
¾ in. do. do.	0 0 7	—	
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 9	0 1 0	
Selected, Figury, per ft. super. as inch	0 1 6	0 2 6	
Dry Walnut, American, per ft. super. as inch	0 0 10	0 1 0	
Teak, per load	17 0 0	22 0 0	
American Whitewood Planks, per ft. cube	0 4 0	0 5 0	
Prepared Flooring, etc.—	Per square.		
1 in. by 7 in. yellow, planed and shot	0 13 6	0 17 0	
1 in. by 7 in. yellow, planed and matched	0 14 0	0 18 0	
1¼ in. by 7 in. yellow, planed and matched	0 16 0	1 0 0	
1 in. by 7 in. white, planed and shot	0 12 0	0 14 6	
1 in. by 7 in. white, planed and matched	0 12 6	0 15 0	
1¼ in. by 7 in. white, planed and matched	0 15 0	0 16 6	
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	0 13 6	
1 in. by 7 in. „ „	0 14 0	0 18 0	
¾ in. by 7 in. white „	0 10 0	0 11 6	
1 in. by 7 in. „ „	0 12 9	0 15 0	

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, £ s. d.	per ton. £ s. d.
Rolled Steel Joists, ordinary sections	7 10 0	8 0 0
Compound Girders, ordinary sections	9 10 0	10 10 0
Steel Compound Stanchions	12 0 0	13 0 0
Angles, Tees, and Channels, ordinary sections	9 10 0	10 10 0
Flitch Plates	9 10 0	10 10 0
Cast Iron Columns and Stanchions including ordinary patterns	8 0 0	9 0 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON— Common Bars	8 10 0	9 0 0
Staffordshire Crown Bars, good merchant quality	8 15 0	9 5 0
Staffordshire "Marked Bars"	10 10 0	—
Mild Steel Bars	8 15 0	9 5 0
Hoop Iron, basis price	9 5 0	9 10 0
„ „ Galvanised	17 0 0	—
(*And upwards, according to size and gauge.)		
Sheet Iron Black— Ordinary sizes to 20 g.	9 15 0	—
„ „ 24 g.	10 15 0	—
„ „ 26 g.	12 5 0	—
Sheet Iron, Galvanised, flat, ordinary quality— Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15 0 0	—
Ordinary sizes to 22 g. and 24 g.	15 10 0	—
„ „ 26 g.	16 10 0	—
Sheet Iron, Galvanised, flat, best quality— Ordinary sizes to 20 g.	18 0 0	—
„ „ 22 g. and 24 g.	18 10 0	—
„ „ 26 g.	20 0 0	—
Galvanised Corrugated Sheets— Ordinary sizes, 6 ft. to 8 ft. 20 g.	14 10 0	—
„ „ 22 g. and 24 g.	14 15 0	—
„ „ 26 g.	16 5 0	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	12 0 0	—
Best Soft Steel Sheets, 22 g. & 24 g.	13 0 0	—
„ „ „ 26 g.	15 0 0	—
Cut Nails, 3 in. to 6 in. (Under 3 in., usual trade extras.)	10 10 0	11 0 0

LEAD, &c.

	Per ton, in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3lb. and up.	18 0 0	—
Pipe in coils	18 10 0	—
Soil pipe	21 0 0	—
Compo pipe	22 0 0	—
ZINC—Sheet— Vieille Montague ton	23 0 0	—
Silesian	27 15 0	—
COPPER— Strong Sheet per lb.	0 1 1	—
Thin „	0 1 2	—
Copper nails „	0 0 11	—
Copper wire „	0 0 10	—
BRASS— Strong Sheet	0 1 0	—
Thin	0 1 1	—
TIN—English Ingots	0 1 4	—
SOLDER—Plumbers'	0 0 7	—
Tinmen's	0 0 9	—
Blowpipe	0 0 11	—

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES

15 oz. thirds	2½d. per ft. delivered.
„ fourths	1⅝d. „ „
21 oz. thirds	3½d. „ „
„ fourths	2¼d. „ „
26 oz thirds	4½d. „ „
„ fourths	3½d. „ „
32 oz. thirds	5d. „ „
„ fourths	4½d. „ „
Fluted Sheet, 15 oz.	3½d. „ „
„ 21 oz.	4½d. „ „

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

⅛ Hartley's	2½d. per ft. delivered.
3/16 „	2½d. „ „
¼ „	3d. „ „
Figured and Oxford Rolled "Oceanic" Glass, white	4d. „ „
Do. „ tinted	5½d. „ „

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 2 1
„ „ „ in barrels	„	0 2 2
„ „ „ in drums	„	0 2 3
Boiled „ in pipes	„	0 2 2
„ „ „ in barrels	„	0 2 3
„ „ „ in drums	„	0 2 4
Turpentine in barrels	„	0 3 3
„ in drums	„	0 3 5
Genuine Ground English White Lead	per ton	22 10 0
Red Lead, Dry	„	22 0 0
Best Linseed Oil Putty	per cwt.	0 7 0
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 0
Berlin Black	0 16 0
Knotting	0 10 9
French and Brush Polish	0 10 6

TO CORRESPONDENTS.

NOTE.—**The responsibility of signed articles, letters,** and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

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TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

AINSWORTH.—For diversion and re-forming road near to Coggra Fold, for Bury Rural District Council. Messrs. Hooley & Johnson, engineer, Croft's Bank, Urmston:—
Pollitt & Co., Bolton £558 14 6

BERWICK-ON-TWEED.—Accepted for disinfector house at Workhouse for the Guardians. Messrs. Gray & Boyd, architects, Berwick:—
Builders: M. Gray & Sons, Ravensdowne, Berwick £22 10
Joiner: A. C. Burn, Spittal, Berwick-on-Tweed 13 14
Slaters and Plasterers: J. Turner & Sons Tweedmouth 8 10
Plumber: W. Cairns, Hide Hill, Berwick 5 7

BOURNEMOUTH.—For making up Muscliff-road, for the Corporation. Mr. F. W. Lacey, Borough Engineer, Municipal Offices, Bournemouth:—
Grounds & Newton, Bournemouth* .. £551 3 5

BOURNEMOUTH.—For sewering Queen's-road (West), Southbourne, for the Corporation. Mr. F. W. Lacey, Borough Engineer, Municipal Offices, Bournemouth:—
Grounds & Newton, Bournemouth*.... £30 9 0

BRISTOL.—For erecting porter's lodge at the Eastville Workhouse, for the Guardians:—

T. Lovell & Sons	£223 0	E. C. Harvey	£196 10
H. H. Forse.....	219 0	P. C. Chapman ..	190 0
E. Preece.....	217 0	S. Lovell	189 0
G. Downs & Son..	215 0	E. T. Moore.....	185 0
T. G. Perrott	210 0	F. S. Hunt	175 0
S. Williams & Sons	210 0	H. C. Bradford, Bristol*	174 10
E. Clark & Sons ..	205 15		
S. Milsom.....	196 18		

BRISTOL.—New banking premises, St. Stephen's-avenue, Bristol. Mr. W. H. Watkins, A.R.I.B.A., architect, 15, Clare-street, Bristol:—

Neale Bros.	£4,855	R. F. Ridd.....	£4,197
Cowlin & Sons	4,420	J. Perkins & Sons..	4,100
Stephens, Baston, & Co., Ltd.....	4,289	C. A. Hayes*.....	3,925

CHISWICK.—For the supply of 10-ton steam-roller and Morrison's scarifier, for the Urban District Council:—

Ruston, Proctor, & Co.....	£550 0	Clayton & Shuttleworth	£490 10
Aveling & Porter .	519 19		

CHISWICK.—For the making-up of carriageway, Duke's-avenue, Chiswick, for the Urban District Council. Mr. E. Willis, Engineer and Surveyor, Town Hall, Chiswick, W.:—

	1.	2.
Constable, Hart, & Co.	£1,435 0 0	£1,363 0 0
W. Shepherd & Sons..	1,560 0 0	1,460 0 0
J. Smart & Son.....	1,988 16 10	1,858 19 10
J. Mowlem & Co.	—	2,997 0 0
H. Woodham & Sons..	1,897 0 0	1,827 0 0

1. If paid in five equal yearly instalments.
2. If paid in one instalment of 50 per cent. upon completion, and the remainder in five equal yearly payments upon satisfactory maintenance.

CHISWICK.—For the making-up of carriage-way, Burlington-lane, Chiswick (Council's portion), for the Urban District Council. Mr. E. Willis, Engineer and Surveyor, Town Hall, Chiswick:—

Potter & Co. ..	£969 6 10	J. Mowlem & Co.....	£748 0 0
T. W. Pedrette.	845 0 0	J. Ball	722 0 0
H. Woodham & Sons.....	749 0 0		

COLCHESTER.—For constructing a road with sewer, etc., for the Rt. Hon. Lord Lucas. Messrs. Ernest S. Beard & Daniell, surveyors, Head-gate, Colchester. Quantities by E. S. Beard & Daniell:—

Harber	£1,472 13 6	J. Pearson, Wilson,&Co.	£1,045 17 2
Dobson & Son	1,237 0 0	F. Wright....	1,042 13 0
A. Sykes	1,185 18 7	W. Chambers	1,019 0 0
Everitt & Sons	1,135 17 6	W. Border & Co.....	1,004 0 0
B. Fairclough	1,125 0 0	Trueman, Ltd.	979 0 0
T. Pedrette & Co.....	1,124 11 0	F. Bennett ..	965 0 0
E. Howes	1,120 0 0	N. Saunders, Dovercourt *	909 0 0
W. Church ..	1,092 4 0		
Howard & Son	1,067 10 0		

KEMPTON PARK.—For the construction of coal bays, fitting and other workshops, stores, toolhouses, conveniences, etc., for the Metropolitan Water Board. Mr. William Booth Bryan, Chief Engineer of Metropolitan Water Board. Quantities by W. H. Webber, F.S.I.Q.S.A.:—

Muirhead & Co.	£20,161 3 0	T. Hickman	£11,564 8 0
J. A. Ewart	13,570 16 1	E. Potterton	11,411 0 0
J. Mowlem & Co.	12,524 0 0	Leslie & Co., Ltd.....	11,280 0 0
A. E. Nunn	12,482 19 2	Playfair & Toole	10,916 0 0
Clift Ford ..	12,189 0 0	Perry & Co.	10,774 0 0
Pasterfield & English ..	11,994 0 0	W. H. Gaze& Sons	10,750 0 0
F. Bull.....	11,809 0 0	Measures Bros.	10,097 0 0
W. Shurmur &Sons, Ltd.	11,790 0 0	Kirk&Randall	9,993 0 0

KEMPTON PARK.—For lines of rails, drain channels, pipe connexions, etc., for sandwashing apparatus, for the Metropolitan Water Board. Mr. William Booth Bryan, Chief Engineer, Metropolitan Water Board:—

Supply of Rails, Fishplates, Bolts, Tiebars and Clips.

M. T. Shaw & Co., Ltd.	£296	Dick, Kerr&Co.,Ltd.*	£220
Fraser & Fraser, Ltd.	240		

Supply of 1 large size Greenway's Patent Sandwashing Machine, complete, with Water-motor and Elevator, etc., and 12 sets of Ejector Apparatus.

J. Gibb & Co., Ltd.* £366

Drain Channels, Pipe Connexions, etc.

E. Potterton.....	£2,050 0 0
Muirhead & Co.....	1,996 0 0
Leslie & Co.	1,300 0 0
A.E. Nunn.....	1,270 15 8
J. A. Ewart	1,215 0 0
J. Mowlem & Co., Ltd.....	1,200 0 0
Playfair & Toole	1,120 0.0
J. Dickson.....	1,093 0 0
Kavanagh & Co.....	1,070 0 0
Perry & Co.*.....	1,000 0 0

LANCASTER.—Accepted subject to confirmation by the Local Government Board, for Children's Home, for the Lancaster Board of Guardians. Mr. J. Parkinson, Architect, 67, Church-street, Lancaster. Quantities by Architect:—

Masonry: Thoms & Sons, Lancaster*	£2,075 6 9
Joinery: Peill & Riley, Lancaster*	684 5 0
Slating and Plastering: Gardner Bros., Lancaster*.....	436 5 0
Plumbing and Glazing: C. H. Whittle, Lancaster*.....	443 0 0
Painting: Swainson & Son, Lancaster*.....	52 7 0
Heating: Parkinson & Sweeney, Lancaster*..	152 0 0

LEWISHAM.—For forming new cubicles at the Park Fever Hospital, Hither Green, S.E., for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief:—

W. H. Hyde & Co.	£206 0	Gardner & Hazell.	£119 0
Martin, Wells, & Co., Ltd.	189 0	A. E. Hubbard ..	113 0
S. Wiles & Sons ..	160 0	F. Miskin, Ltd. ..	112 0
Staines & Son....	149 0	W. F. Blay	112 0
W. Reason	145 0	J. W. Ellingham..	110 0
H. Kent	145 0	T. E. Wright	109 10
F.J.Oldman & Sons	138 5	T. Knight	103 0
L. Kazak	120 0	J. Lonsdale, London-road, Swanley*.	101 0

LICHFIELD (Staffs).—For erecting children's homes at Wissage-hill, Lichfield, for the Guardians. Mr. R. J. Barnes, architect, City Chambers, Lichfield. Quantities by Mr. G. Lawrence Watson, Newhall-street, Birmingham:—

T. Rowbotham....	£6,450	T. Mason	£5,844
W. Sharp & Sons..	6,348	J. R. Deacon.....	5,750
T. Elvins	6,170	Hacksley Bros....	5,743
H. Gibbs	6,060	C. Griffiths.....	5,698
W. Hopkins	5,995	R. Kershaw	5,650
G. Cave & Sons	5,995	E. J. Chattle Lichfield*	5,488
T. Lowe & Sons....	5,975		
G. Hodges.....	5,940		

LLANTRISANT.—For improvement to the district road, near Glanmychydd Fawr, Llantrisant, for Llantrisant and Llantwit Fardre Rural District Council. Mr. Gomer S. Morgan, Surveyor, School-street, Pontyclun:—

N. Thomas	£214 3 0	T. Davies	£124 14 10
W. Cox	188 5 6	Barnes, Chaplin, & Co.	121 4 2
J. Lloyd.....	185 7 6	John & West, Llantrisant*.	120 8 6
W. John.....	176 15 1		
G. L. Morgan ..	160 19 10		
H. Ringham ..	153 2 6		

LONDON.—For a reservoir in Lee Valley, for the Metropolitan Water Board:—

W. Kennedy, Ltd.	£925,386 19 11
Pedrette & Co.....	847,454 2 0
Moran & Sons	596,730 7 9
J. Byrom, Ltd.....	570,717 17 4
Monk & Newell	560,834 14 5
Perry & Co.	558,181 0 0
Leslie & Co.	539,144 0 0
R. H. B. Neal	499,629 0 0
H. M. Nowell	468,460 19 1
R. McAlpine & Sons	428,059 15 2
Playfair & Toole	427,040 17 7
Topham, Jones, & Railton.....	420,529 5 8
Kirk & Randall	415,544 0 0
Baldry & Yerburg	404,314 12 7
E. Nuttall & Co.	402,617 1 4
W. Scott & Middleton.....	396,891 11 10
Morrison & Mason, Ltd.....	394,591 11 5
Docwra & Sons.....	388,516 17 11
S. Pearson & Son, Ltd.	375,960 2 3
Aird & Sons	373,984 15 5
W. Manders	353,191 4 5
Wall, Ltd.*	340,770 0 0

LONDON.—For reconstruction of tramways in Caledonian-road and Seven Sisters-road, for the London County Council:—

G. Law	£68,489 0 0
National Electric Construction Co., Ltd.....	64,993 11 2
W. Muirhead & Co.	62,110 11 2
W. Griffiths & Co., Ltd.	62,041 16 7
W. Underwood & Brother	61,240 14 0
E. Nuttall & Co.	59,917 1 2
J. Mowlem & Co., Ltd.	59,007 0 0
J. G. White & Co., Ltd.	58,249 14 3
W. Manders	56,684 7 4
R. W. Blackwell & Co., Ltd.	55,013 5 10
Dick, Kerr, & Co., Ltd., London, E.C.*.....	53,516 15 10

[The Chief Engineer's estimate, comparable with the tenders, is £58,986 16 2.]

[Messrs. Dick, Kerr, & Co., Ltd., have expressed their willingness to give preference in employment on casual or unskilled labour required for the work to men bonâ-fide resident in the County of London. They are to sublet to the undermentioned firms (or to such other persons or firms as may be approved by the Chief Engineer under the contract) the following portions of the work specified in the foregoing resolution, namely, (i) to the Anderson Foundry Co., Ltd., or Wilson, Pease, & Co., Ltd., the supply of the yokes; (ii.) to Doultons, Ltd., or Buller's, Ltd., the supply of the insulators; (iii.) to Bayliss, Jones, & Bayliss, Ltd., the supply of the tie bars, bolts, etc.; and (iv.) to the Associated Portland Cement Manufacturers, Ltd., the supply of cement.]

LONDON.—For wood paving the margins of Brook Green-road, Shepherd's Bush-road, and the Lawn, Shepherd's Bush Green:—

W. Shepherd & Sons.....	£9,336 7 0
Mowlem & Co.....	8,546 0 0
Wimpey & Co.....	8,148 0 0
The Acme Wood Flooring & Paving Co.	7,931 18 4
W. Griffiths & Co.....	7,916 9 8
Improved Wood Pavement Co....	7,866 19 4

MARKET HARBOROUGH.—For additions to waterworks, North Kilworth and Husbands Bosworth, for Market Harborough Urban District Council. Mr. H. G. Coales, Engineer, Bank-chambers, Market Harborough:—

R. Crawford..	£2,447 15 11	H. H. Garlick .	£1,829 19 0
C. Chamberlain	2,183 8 2	Firth & Co., Leicester*..	1,827 1 7
A. Jewell....	1,949 5 9		

[Engineer's estimate, £1,901 10 4.]

MARLOW.—For extensions to sheds at depôt, for the Urban District Council. Mr. T. N. W. Watts, High-street, Marlow, Surveyor to Council. Quantities by Surveyor:—

F. J. Feesey	£27 10 0	Keates & Gill ..	£18 10 0
E. Hornby.....	21 10 0	C. E. Plumridge, Marlow*.....	17 5 6
Lannox & Alcock	19 15 0		

MERTHYR VALE.—For alterations, new latrines, forming entrances, etc., at Council School, for the Education Committee. Mr. J. Llewellin Smith, architect, Merthyr Tydfil:—
D. J. Vaughan, Tredegar..... £2,197

NAAS.—For building ten labourers' cottages in pairs and nine singly, and for fencing, etc., for the Naas No. 2 Rural District Council. Mr. Francis Bergin, B.E. Engineer, 36, Westmoreland-street, Dublin:—
For four cottages
J. Hyland, Naas* £579

NORWICH.—For new mission room, for the Vicar and Churchwardens of St. Martin-at-Palace. Messrs. Lacey & Upcher, architects and surveyors, 6, Upper King-street, Norwich. Quantities by architects:—

J. Evans	£464 10 0	J. S. Smith ..	£389 0 0
L. Lincoln	439 13 10	Scarles Bros...	389 0 0
W. J. Hannent	391 0 0	H.C.Greengrass*	359 0 0

[All of Norwich.]

PAIGNTON.—For erecting a science and art schoo in Bishop's place, for the Urban District Council. Mr. W. G. Couldrey, Architect, Palace-avenue, Paignton:—

E. Preece	£1,813 0 0	W. Smaridge	£1,314 14 6
R. Wilkins & Sons	1,735 0 0	H. Drew	1,285 0 0
S. Roberts, Ltd.	1,588 0 0	G. Webber ..	1,250 0 0
W. E. Blake..	1,575 0 0	R.E.Narracott	1,249 0 0
E. P. Bovey & Son.....	1,564 0 0	H. Webber & Sons	1,198 0 0
F. J. Badcock	1,515 0 0	Flood&Popplestone, Paignton*	1,180 0 0
R. Pollard&Co.	1,483 5 0		
G. Pollard&Co., Ltd.	1,470 0 0		

PANNAL.—For constructing main sewers, for Knaresborough Rural District Council. Mr. Wm. Lupton Surveyor to Council. Quantities by Surveyor:—
J. L. H. Matthews, Harrogate £1,594 4 1

RIPON.—For secondary schoo for girls, for the Governors. Messrs. Connon & Chorley, architects, 16, Park-place, Leeds. Quantities by architects:—
W. Airey & Son, Servia-road, Leeds*.... £5,130

ROYDON.—For sewers and sewage disposal works, for Epping Rural District Council. Mr H. Tooley, F.R.I.B.A., Queen's-road, Buckhurst-hill:—

Langley & Johnson ..	£4,408 0 0	A. Streeter & Co.	£2,514 1 10
H.V. Smith & Co.	3,114 13 9	J. Jackson..	2,458 0 0
Fry Bros. ..	2,997 0 0	T.W.Pedrette	2,295 0 0
C. Ford	2,687 0 0	W.&C.French	2,278 0 0
A. H. Ball & Co.	2,650 0 0	Wilson, Bordèr, & Co..	2,165 0 8
E. E.Winch..	2,594 0 0	T. Adams ..	2,160 0 0
F. Osenton ..	2,567 0 0	W. Manders.	2,150 0 1
G. Bell & Sons	2,529 0 0	E. Knifton, Edmonton.	2,099 14 9½

[Engineer's estimate, £2,642.]

SOUTHAMPTON.—For additions to the Grammar School, West Marlands, for the Governors of the Endowed Schools. Mr. A. F. Gutteridge, architect, 9, Portland-street, Southampton. Quantities by architect:—

R. Wilkins & Sons	£3,344 0 0
H. Stevens & Co.	3,260 0 0
Musselwhite & Sapp	3,247 0 0
Wakeham & Son	3,195 0 0
G. R. Long	3,190 0 0
A. J. Colborne	3,149 10 0
Golding & Ansell	3,144 0 0
Jenkins & Sons, Ltd.	3,140 0 0
Dyer & Sons	3,089 0 0
J. Nichol	3,030 0 0
E. Preece	2,990 0 0
Franklin, W. (Exors. of), Portswoods, Southampton*	2,992 0 0

SPENNYMOOR.—For road-making, Osborne-road, and footpath in Flora-street, for the Urban District Council. Mr. C. R. Spencer, Surveyor, Council Offices, Spennymoor:—

	Osborne-road.	Flora-street.
J. Crombie & Sons, Ltd.	£317 6 0	£39 3
J. Denham	286 19 0	39 15
South Bank Slag Co.	354 0 6	34 8
G. Pickering, West Hartlepool*	264 18 0	37 6

STROOD.—For the construction of covered service reservoir, for the Corporation. Mr. W. Banks, City Surveyor, Rochester. Quantites by Mr. H. R. Messinge, 2, Pevey-villas, Seabrook:—

Pedrette & Co., 110, Queen's-road, Finsbury Park*	£1,866 15 6

SUTTON (Surrey).—For cleaning and painting works at the Downs school, for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief:—

J. Day	£320 0 0	A. H. Inns	£165 0 0
Campbell & Christmas	284 0 0	J. W. Ellingham	155 0 0
E. Proctor & Son	260 0 0	S. T. Wright	150 0 0
Staines & Son	235 0 0	L. Kazak	144 0 0
B. Richards & Son	234 18 6	J. Johnson	120 0 0
R. Athey & Co.	195 0 0	R. Woollaston & Co.	112 0 0
T. Carr	190 0 0	J. Hocking & Co., 140, Southwark-street, S.E.*	109 0 0
Vigor & Co.	185 0 0		
J. J. Richards	169 0 0		

SUTTON (Surrey).—For installing new fire-mains, with hydrants, etc., at Belmont Asylum, for the Metropolitan Asylums Board. Mr. W. T. Hatch, M.Inst.C.E., Engineer-in-Chief:—

W. G. Cannon & Sons, Ltd.	£1,951 10 0
R. Crittall & Co.	1,283 0 0
Dent & Hellyer	939 0 0
Merryweather & Sons, Ltd.	933 14 1
A. H. Ball & Co.	917 0 0
Tilley Bros.	886 11 3
Brightside Foundry & Engineering Co., Ltd.	880 0 0
G. Humphreys & Acdy	871 17 6
A. R. Knight	870 0 0
Moorwood, Sons, & Co., Ltd.	860 0 0
T. T. Smith & Co.	857 0 0
Shand, Mason, & Co.	830 0 0
J. Blakeborough & Sons	830 0 0
A. H. Inns	825 0 0
J. & F. May	820 10 0
T. Potter & Sons, Ltd.	798 0 0
J. Simpson & Co., Ltd.	762 0 0
R. Harding & Son	721 5 0
A. Streeter & Co.	713 18 7
Wenham & Waters, Ltd., Paragon Works, Croydon*	659 0 0

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TERRINGTON ST. CLEMENT.—For erecting pair of semi-detached cottages, for Messrs. Tune & Son. Messrs. Walker & Walker, architects and surveyors, Hill-street, Wisbech:—

G. Hornigold	£327 10	Barnes & Co.	£248 0
J. S. Johnson & Son	290 15	C. Handley	238 10
Emmerson	270 0	H. Tann, Walsoken*	236 0
Spaulding & Hampton	260 0		

TERRINGTON-ST.-CLEMENT.—For erecting residence on the Alma Lodge Estate, for Mr. F. Law. Messrs. Walker & Walker, architects and surveyors, Hill-street, Wisbech. Quantities by the architects:—

Tash & Langley	£995 0 0
Read & Wildbur	985 0 0
G. J. West	947 0 0
H. W. Reeder	923 12 2
Dye & Allen	889 0 0
Spaulding & Hampton	866 0 0
R. Shanks	848 0 0
Rands & Sons	836 0 0
P. Bone	830 0 0
Barnes & Co.	828 0 0
Elworthy & Co.	820 0 0
Clark & Son	811 0 0
Johnson & Son, Tillney St. Lawrence‡	810 0 0
J. W. Wilkinson	794 0 0

‡ Accepted conditionally.

TONYREFAIL.—For taking up relaying, and extending about 320 yds. of 9 in. diameter stoneware pipe sewer, together with the appurtenant works at Mill-street, Tonyrefail, for the Llantrisant and Llantwit-Fardre Rural District Council. Mr. Gomer S. Morgan, surveyor, School-street, Pontyclun:—

J. Lloyd	£220 5 6
Barnes, Chaplin & Co.	198 15 6
John & West	197 4 11½
T. Lewis	177 17 9
G. L. Morgan, 11, The Parade, Pontypridd*	154 13 3

TREHARRIS.—For building new cloakrooms, latrines, etc., at council school, for Merthyr Tydfil Education Committee. Mr. J. Llewellin Smith, architect, Merthyr Tydfil:—

D. J. Vaughan, Tredegar	£1,778 0 0

TUNSTALL.—For new factory Scotia-road, Burslem, for the Grindley Hotel Ware Co. Messrs. A. R. Wood & Son, architects, Tunstall and Burslem:—

Yorke & Goodwin	£9,990	W. Grant & Son	£9,146
J. Cooke	9,780	C. Cornes & Son	8,975
T. Godwin	9,714	C. Cope	8,948
S. Wilton	9,500	H. Howlett	8,929
C. Smith	9,500	J. Grant, Cobridge*	8,470
J. W. Brindley	9,500		

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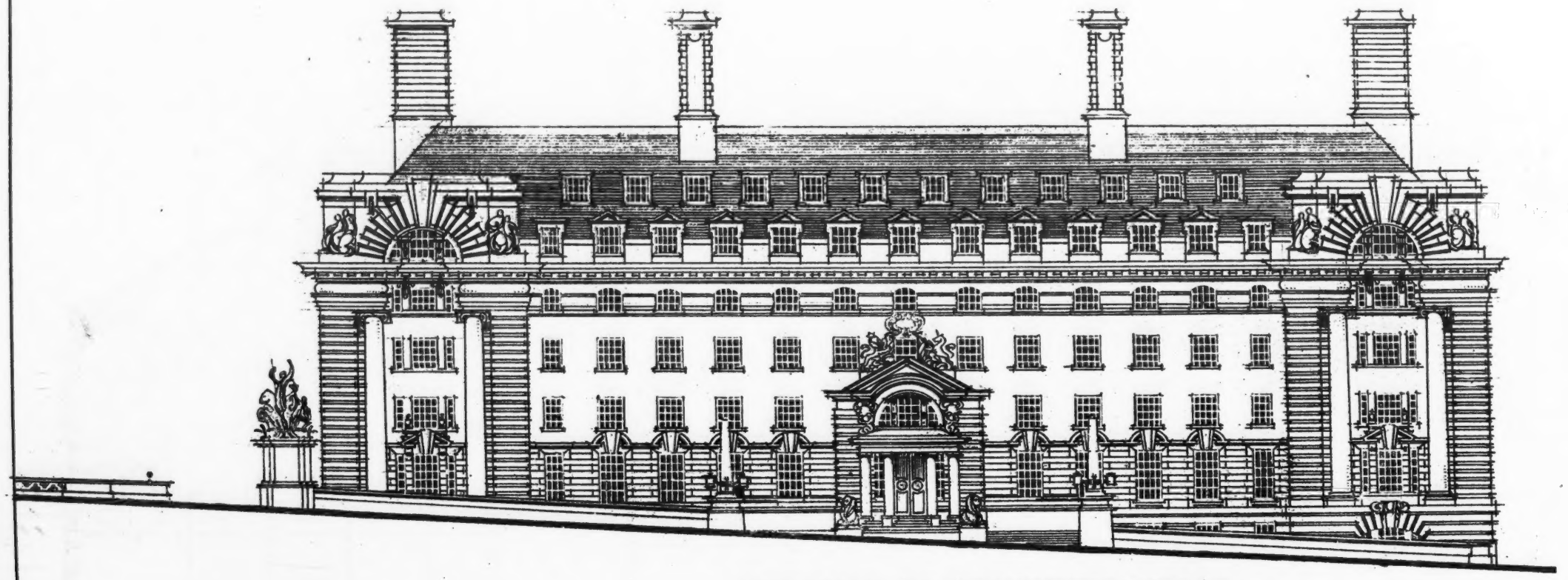
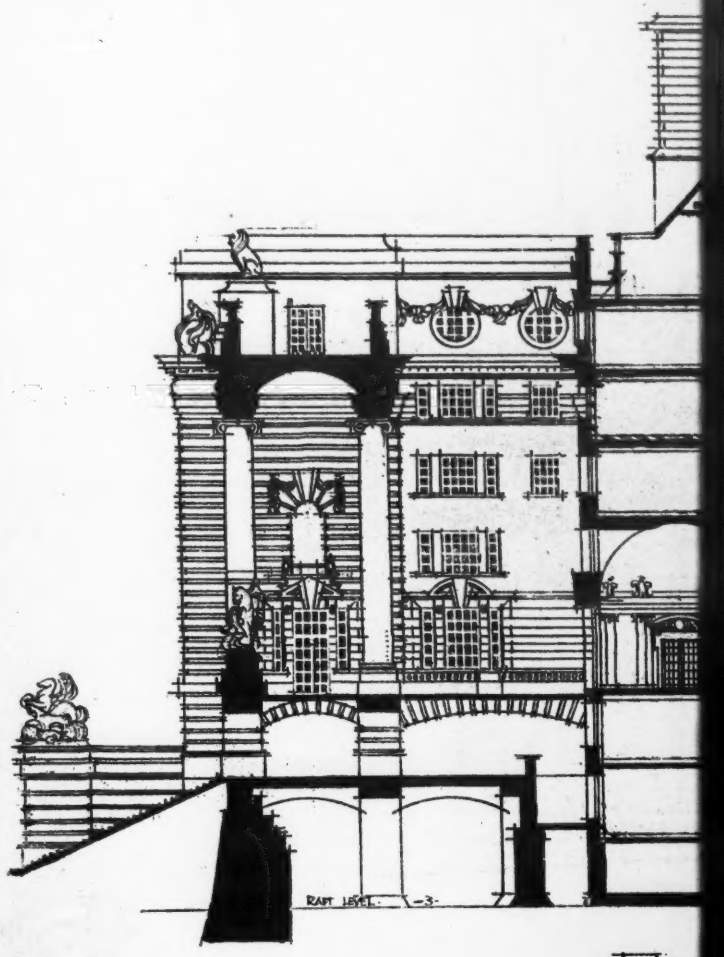
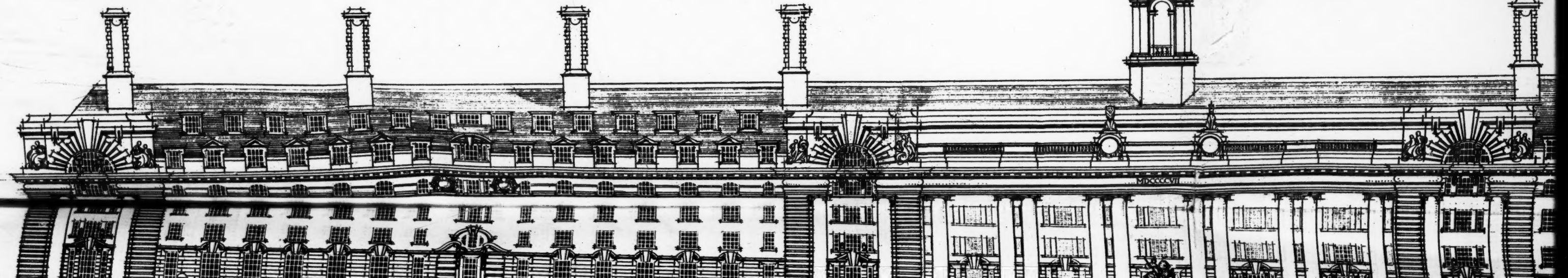
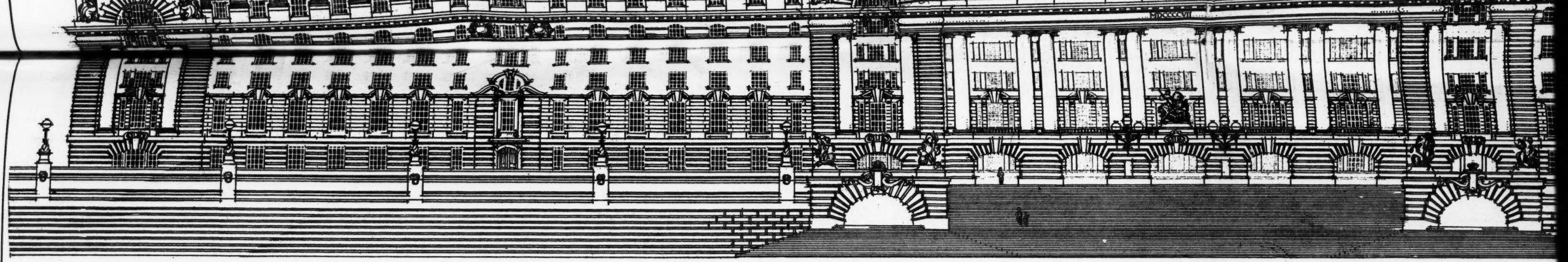


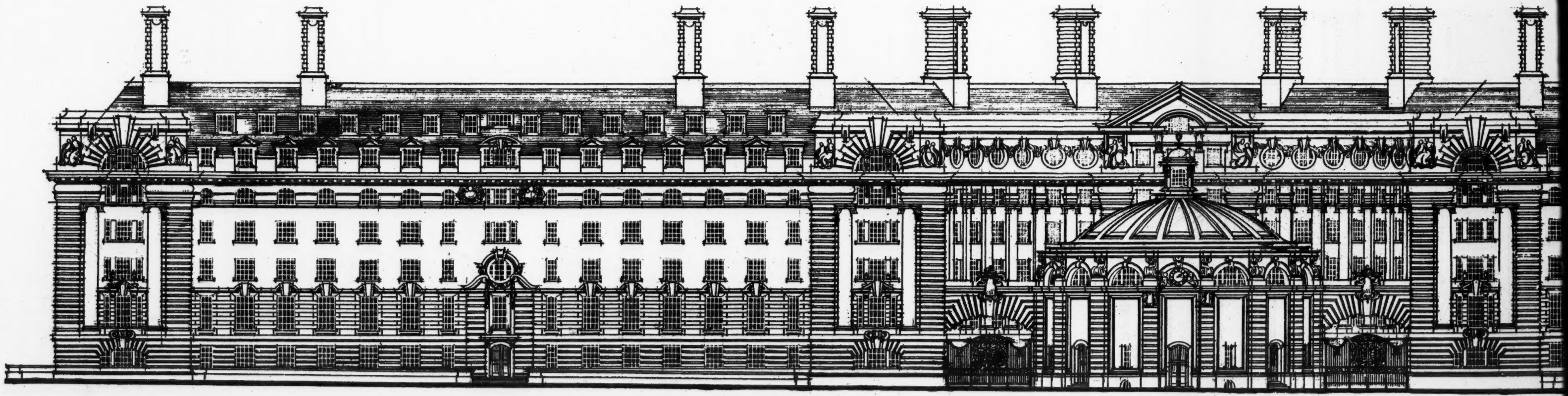
ELEVATION TO WESTMINSTER BRIDGE.







ELEVATION TO RIVER



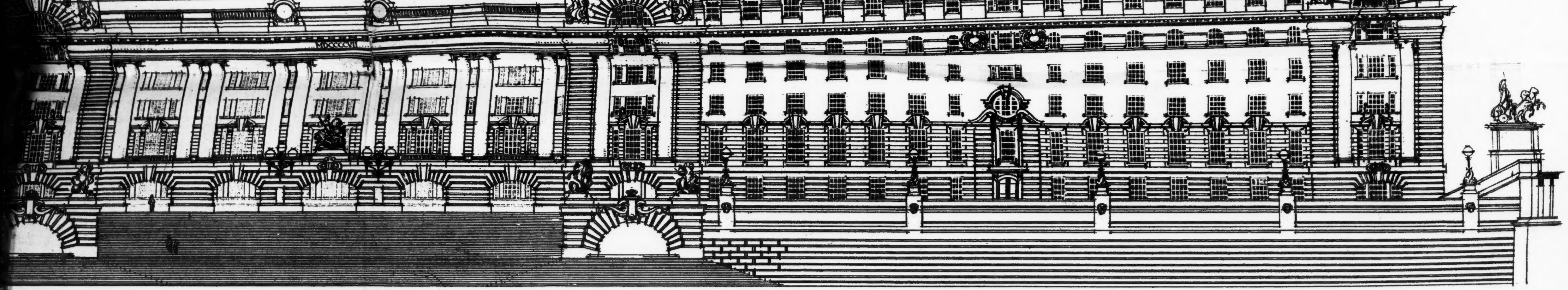
Scale of 10 5 0 10 20 30 40 50 60 70 80 90 feet

ELEVATION TO BELVEDERE ROAD a

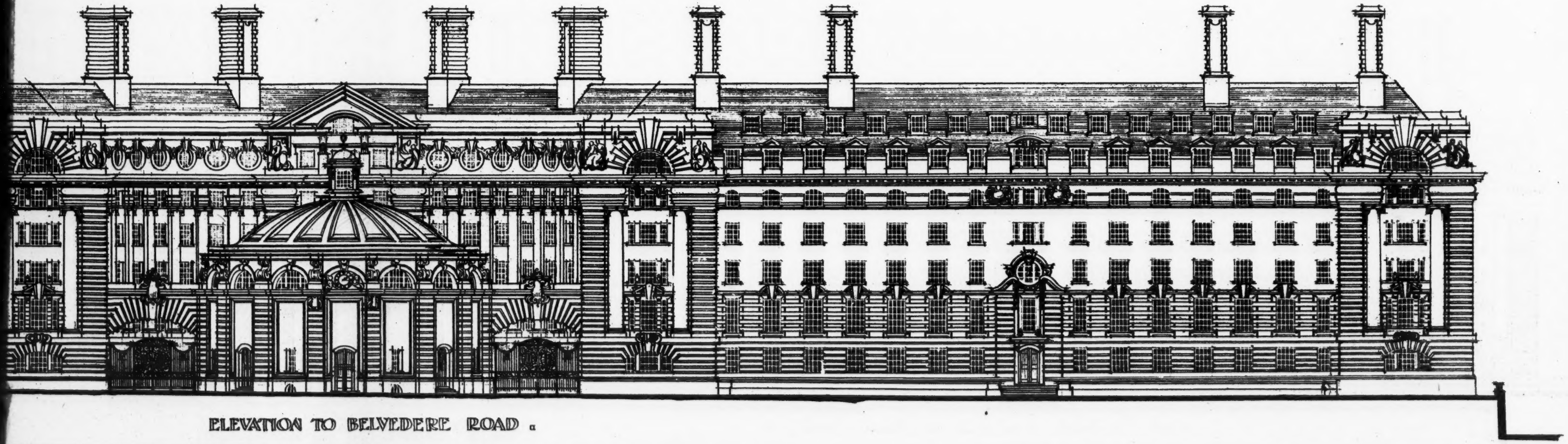
LONDON COUNTY HALL: SELECTED DESIGN.—By Mr. Ralph Knott.

ELEVATIONS AND SECTION.

CROSS SECTION.



ELEVATION TO RIVER



ELEVATION TO BELVEDERE ROAD a

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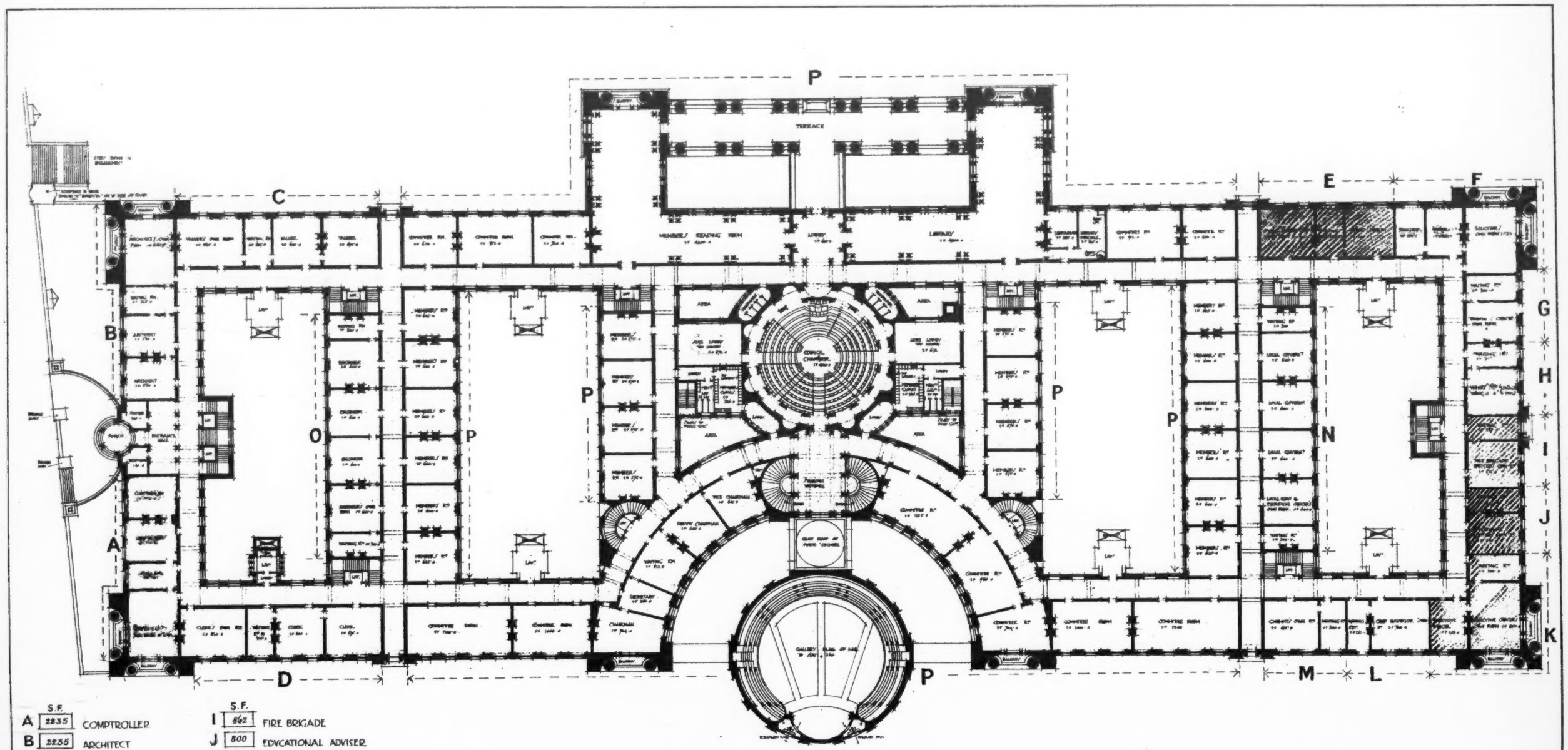
ELEVATIONS AND SECTION.



	S.F.		
A	2335	COMPTROLLER	
B	2235	ARCHITECT	
C	2430	VALUER	
D	2430	CLERK	
E	1600	PUBLIC HEALTH	
F	1650	SOLICITOR	
G	800	TRAMWAYS	
H	862	WORKS DEPARTMENT	

	S.F.	
I	862	FIRE BRIGADE
J	800	EDUCATIONAL ADVISER
K	1600	EXECUTIVE OFFICER.
L	962	CHIEF INSPECTOR.
M	975	CHEMIST
N	3000	LOCAL GOVERNMENT
O	3000	ENGINEER.
P	42005	COUNCIL CHAMBER, COMMITTEE RMS ETC

FIRST FLOOR PLAN.
(PRINCIPAL FLOOR)

	S.F.		S.F.
A	12125	COMPTROLLER	
B	12545	ARCHITECT	
C	8771	PVBLIC HEALTH DEPT	
D	4501	PVBLIC CONTROL	
E	1175	FIRE BRIGADE	
F	4470	PARKS DEPT	
G	850	CHIEF INSPECTOR	
H	1130	EXECVTIVE OFFICER	
I	8299	ASYLVMS DEPT	
J	6324	HOVSING DEPT	

GROVND FLOOR PLAN.

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PLANS.

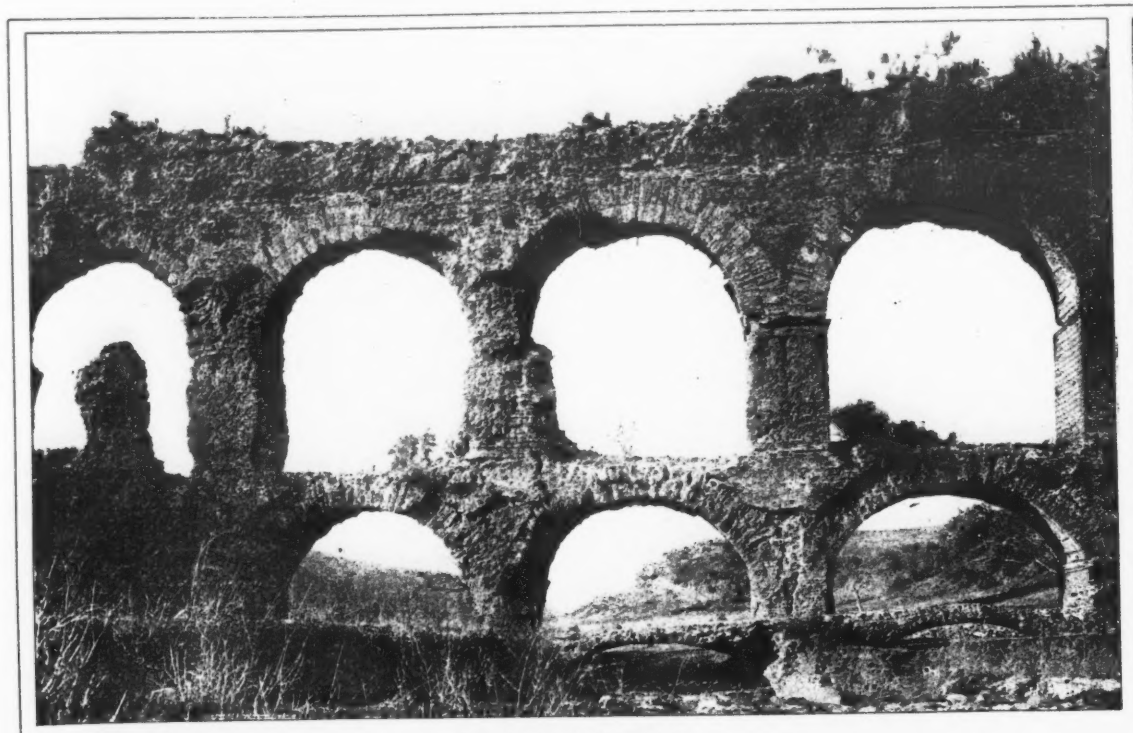

Fig. 11. ARCHI DELLA MOLA.

Fig. 12. PONTE S. PIETRO

Fig. 13. PONTE LUPO.

Fig. 14. PONTE LUPO.

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ILLUSTRATIONS TO "AQUEDUCTS OF ANCIENT ROME."—PLATE II.

Fig. 15. PONTE TAULELLA.

Fig. 16. PONTE DELLA BULICA.

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ILLUSTRATIONS TO "AQUEDUCTS OF ANCIENT ROME."—PLATE III.

Fig. 14. PONTE LUPO.
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ILLUSTRATIONS TO "AQUEDUCTS OF ANCIENT ROME."—PLATE II.
PONTE LUPO.
Fig. 13.

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